



FRIDAY, NOVEMBER 18.

## Contributions.

### Signals and their Apprehension.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Your excellent article on signals brought to my mind the substance of a recent conversation with an unusually intelligent engine-driver of over 20 years' experience. He was explaining to me the difficulty of not overrunning signals to which one was so accustomed by daily familiarity as to make them objects difficult to put one's attention upon. He especially objected to changing the signal under the eye of the engineer, and said it was much easier to get at one glance the full sense of the situation. If, for instance, the signal showed the red or green until the approach of the train, being then changed to white, the first glance of the eye caught the color but as an expected object, and one's attention was easily diverted from it by any pounding of the engine or by any thing or sound demanding attention, so that a second glance was forgotten. He and his fireman had run past a signal, both unable to say after it had been past how it stood—color or white.\*

All this seems to me strongly in favor of the semaphore arm as connected with color signals and "interlocked" with them. And here I would like to ask if there is not danger of discussing the signal question too much from the standpoint of the giving rather than of the comprehension of signals already given. The English, I believe, have firmly established the principle that the normal position of a signal is at danger; but should not this principle be modified by the necessity (arising out of the small impression made by familiar things) that a true danger signal should have somewhat unusual about it?

This may be a very crude suggestion, and the principle a wrong one in view of the fact that additional warnings tend to lessen the value of usual and regular ones.

As to lantern signals, my experience has led me to believe that while executive officers have the best knowledge of general points, only the working, practical man can be relied upon for an experienced opinion as to details, and while such men find it difficult to discriminate the merits from the demerits of any system, and either commend or condemn it *in toto*, I should much like to know what the more intelligent of them (conductors, brakemen, engine-men) have to say. Anyone who will watch a busy railroad yard at night will see reason to believe that no mere test of principles will decide this matter wisely. Signals must not only be understood easily, but they must be so foreign to one another and to all ordinary movements of lights and lanterns as not to be confused with any others.

In illustration of the differences between men's minds, and the value of their testimony on such matters, I remember what a fireman told his master mechanic as to how he learned to know the difference between an approaching head light and a large white "bull's-eye" light. "The head light," said he, "I found out lights both rails, the 'bull's-eye' lights but one rail."† The master mechanic was investigating a rumored accident at the time, and took occasion to question an old engineer on the same subject. The latter stoutly persisted that he could easily tell the difference between the two lights, but could not tell how he did so. AMATEUR.

### A Loose Trunk Line.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In these days of consolidations and general railroad prosperity the patrons of the trunk lines have a right to expect that the managers thereof will make at least a faint effort to make their roads safe thoroughfares. The word "safe" is emphasized because that rises superior to all other considerations; next in order comfort, and after that, luxury. Without the former we cannot enjoy the two latter. If we are traveling on a road that has a reputation for thorough management and is known as a safe route, we can enjoy comfort in an ordinary coach, because we consider ourselves safe; but place us in the most gorgeous Pullman on a road where accidents are known to be frequent, and we are fidgetty, nervous and uneasy. There can be no comfort in traveling without a contented mind, or a consciousness that all reasonable measures have been adopted that would contribute to our safety.

These thoughts (and many more of a kindred nature) came to the surface on a recent inspection of a portion of a trunk line that nearly spans a continent. There are several hundreds of miles of road on the line in question that may be considered to be in a fair condition, or at least not open to severe criticism; but there are about 340 miles of this great line that is a disgrace to the age in which we live. Three or four years ago there was some show of an excuse for this state of things on this particular line, but now there is none whatever. The road has always enjoyed a fair share of traffic—in fact may be said to have been a successful competitor with other trunk lines, and is certainly a

power in the great railroad system of the American continent. It traverses a country abounding in first-class material for railroad substructure, and its facilities for furnishing materials for superstructure and equipments are second to none in this country, and it is difficult to assign any reason for the unsafe condition of the road other than mismanagement. It is true that a large proportion of this road was but an apology for a road when first built, for which the present management is not responsible; but there has been ample time to remedy all defects since it came into the possession of the present owners and managers.

Below is a brief and accurate description of the road-bed and track on this road: No ballast except in patches and that very light as to depth. There is an abundance of good gravel convenient to the line. Ties mostly split from large timber, and but for their length would more resemble fence rails than ties. These are far apart and thrown down haphazard, and the rails cut into them badly where the road-bed is sufficiently firm to assist the moguls in that destructive process. Being of triangular section, the ties have but little bearing on the road-bed unless laid base downward. In that case the rail must rest on a sharp edge instead of a flat surface, and the spikes get but an imperfect hold, and the rail cuts its way rapidly into the ties, and the spikes work loose. If the ties are laid base upward, they present a flat surface to the rail, but give but little support from below. Many of those ties are broken between the rails by reason of the earth washing from under the ends of the ties on narrow embankments. This leaves no bearing except midway between the rails, and the result is broken ties, spreading of rails, derailment, ditching, destruction and death.

In the absence of ballast the men on repairs are striving to keep the rails in sight by shimming between the tie and rail and also by driving wedges and blocks under the ends of the ties.

Shimming in summer has been recommended in these columns, and has been practiced to good advantage on many roads; but that was under far different circumstances than in the present instance. On an unballasted road, with good ties, the rails may be kept in good surface by shimming, when tamping would be worse than a waste of time. When a tie with a good face on it has settled into the road-bed, it has a good bearing, and by shimming under the rail the track may be put in good condition, whereas by raising the tie and tamping, the bed is disturbed and there is "mush" under the tie in place of compact earth or clay. But these men were shimming under difficulties. There were but few ties that had enough face on which to place a shim properly. The method employed here was to place the shim across the tie and lengthwise under the rail. In this way rails were cobbled up on blocks several inches high, which rendered the track decidedly dangerous. But these men can do no better. Of course tamping is out of the question, and as they are not furnished with material for shims they must resort to any makeshift that suggests itself to supply the deficiency. This they do in a very small measure by hacking off blocks or wedges from fences, ends of ties, etc. When the rails are raised to a considerable height for shimming, a piece of plank or a block two feet or thereabouts in length should be spiked to the top of the tie lengthwise. Then spike the rail as though no shim was there and the track is safe from spreading. To prevent spreading the men on this road used splice bars for braces. One end of the bar is placed in the neck of the rail and the other spiked to a tie. In the absence of splice bars a piece of wood is substituted. Many of these braces (so called) have become loose, out of place, and are lying several inches from the rail; splice bars loose and rattling, bent and broken, bolts loose, broken and out; rails battered and bent. The rails were laid without reference to joints, some being between the ties, others on the ties, and some on the edges of the ties. Ties badly decayed and many of them perfectly rotten. In one instance a joint had at some time rested on a tie. About three feet of the end of this tie was entirely gone, and there was not as much as a piece of rotten wood under the joint. The ties each side of where the joint tie had been were nearly three feet apart. The rails had been spliced with four bolted bars, but only two were left, and they barely kept the bars dangling to the rails.

Add to this the fact that the spikes are drawn out of the ties from one to two inches by the excessive vibration of the rails, narrow cuttings and embankments, snaky alignment and wavy surface, and you have a correct statement of the condition of this road as far as it goes. Some of these statements may seem incredible, but they are true nevertheless; and we may add that the drainage here has been neglected and is in keeping with all other matters pertaining to the department of way. All this, and more (in the face of a long winter and a heavy traffic in view), is certainly not in keeping with this age of railroad progress and is altogether, an unpleasant subject to dwell upon. Years ago, when capitalists were slow to invest in railroads and it was necessary to make a dollar go as far as possible in railroad construction, and fixtures and appliances were defective in design and workmanship, and earnings light, and the roads in the hands of inexperienced officers and operatives, it might reasonably be expected that we should operate a great deal of poorly constructed and poorly managed railroad, which was the case. But now, when we have thousands of miles of magnificent railroads and a country full of experienced managers, and no end of capital, and a lively traffic, such a road as this one would seem to belong to a different age—one of the dark ages. But it is gratifying to know that such roads as we have been describing are rapidly growing scarce.

WM. S. HUNTINGTON.

### More About Station Conveniences.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I am tempted to write you another letter on station conveniences, because I have not yet said on this subject all that is in my mind.

I want first to advocate in the strongest way the clock-face train-time indicator which is used by the Pennsylvania, the Philadelphia, Wilmington & Baltimore and other roads. It should be so well known as to need no description, but its limited use at railroad stations argues a limited knowledge of it among railroad men—perhaps it would be better to say, indicates limited attention to it by railroad men. It consists of a clock face with movable hands above an index board having slots for slides, each bearing the name of a station in plain letters; it is thus possible to indicate by it the time of the train and all important stations to which it will convey passengers.

The question arises in the passenger's mind (which, taking a precedent from certain scientific men, railroad men may declare is not a railroad mind). Why cannot so simple a device be used in a modified form at all stations? Fixed to the outside of the ticket office, the hands could be moved by the ticket agent from within, and many needless inquiries, some time and some ill temper be saved, especially when important trains fall an hour or less behind their scheduled time.

Some roads prefer to rely on the human voice as a train indicator, not only at way stations, but also at the main depot. But even here a mechanical train indicator inside the waiting room would ease much anxious fidgetiness on the part of anxious travelers of all ages and both sexes. It must not be said that passengers should not be anxious; anxiety is a fact, and, belonging to a considerable portion of traffic, must be met, and eased as tired back muscles are eased, by having a rest for them on seats and chairs. A railroad should educate its passengers (*ride* the Pennsylvania's notice in all cars about passing out at the rear door at all stations), but it must begin by taking account of all their ignorances, weaknesses and anxieties.

As a passenger, I was never carried away in the wrong train in this or any other country, but in my native America here I had some narrow escapes, and I give American railroads little credit for being able to boast that they have never taken me out of my way. Indeed, now I think of it, I have a faint remembrance that they did get the better of me once, and I remember very distinctly this sad occurrence. It was late of Saturday, dark and rainy; after some trouble I had been able to find my train, and it had just begun to move forward when a lady asked, in an agitated voice, if this was the train to ——. It was not the train to blank, and that poor lonely woman had to get off at a still lonelier spot in the dingy, wet darkness to find her way to the street cars. My experience in finding the train makes me ready to accuse that railroad company of gross carelessness, of all the fault and injury to this unprotected woman.

Had there been a proper sign before the train or on the car, the trouble need not have arisen. And in the use of these signs will railroad men excuse me and the printer aid me in showing what an index hand is.

A sign between two trains which has no index on it may indicate either—even if it be nearer one than the other. Every sign-board should have a *reversible* index hand on the top of it.

Why should not passenger cars, however, have a glass-covered slot (by the grab-handle) and be labeled as well as freight cars? This would save a greenish passenger (there are such, quite green, greener than unripe gooseberries) from going to Philadelphia when he wished to go to New York, or to Burlington, Iowa, when he wished to go to Chicago.

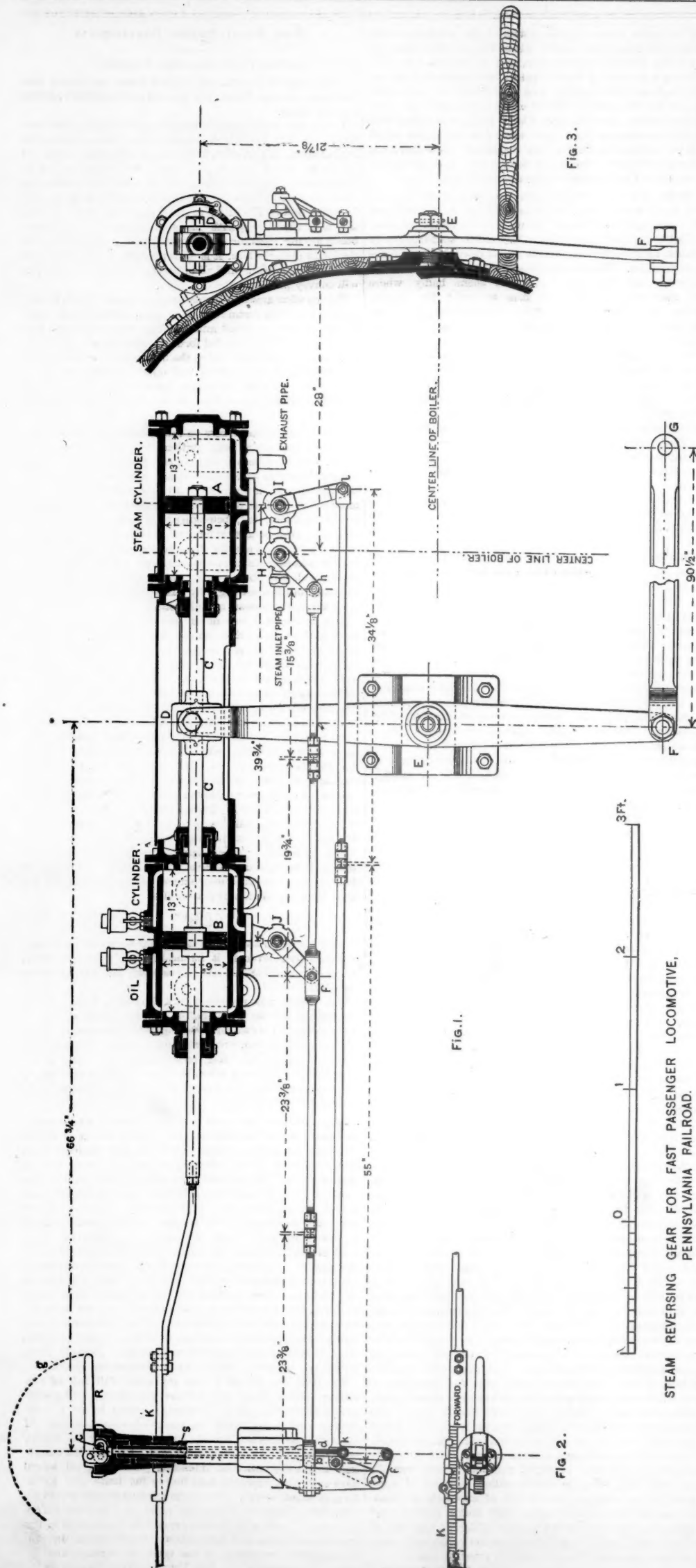
Railroad men will reply to me that there are not so many mistakes.

True, but there are some; and there is much spent breath, and quantities of needless anxiety—for, I repeat it again: *Passenger anxieties* are facts which no true railroad man should leave out of his thoughts and care. If you, my ingenious friend, the railroad advertising agent, would give some of your suggestive attention to this subject, and would save some of that carmine ink of which you are so liberal for foreign notices and cards, I am sure you could do much to advertise your road in the best place, *at home*. If well advertised there as a careful, comforting, accommodating and well-managed road, your passengers will see that your fame gets abroad east and west—even without the use of poetic lines. Not however, that I have sought against these; only the best railroad poetry is a comfortable mind in a comfortable body, riding in an easy seat, by a large window on a safe railroad, which supplies a good road-bed and plenty of pure air. This, my friend, is poetry—the poetry of comfortable motion.

My Dear Mr. Editor, I find my mind still full of this matter, which, if you will find me some space, I will gladly use on another occasion. I want, however, to say a comforting word to my friend, the poetic advertising agent. I know that he does not manage the railroad, or its trains, not to speak of its road-bed or its cars. His duty is a simple one—to get the notice of intending passengers. I would have even him, however, hold fast to the truth and to the form of sound words. The main advantage and object of advertising is simply to keep the name of the road before the public. I am glad to see a general tendency to drop the pressing of claims and assertions and to rely upon the simple suggestive repetition of the road, its termini and route. Respectfully, THE UNCLASSIFIED TRAVELER.

\* The writer and a friend who were accustomed to pass through a mile-long tunnel twice daily, on the cars, generally reading until the tunnel was fairly entered, were both, one morning, utterly unable to remember any tunnel-interval in their journey or their reading.

† This is his answer as I remember it.



### Reversing Gear of the Pennsylvania Fast Passenger Locomotive.

From the fact that steam reversing gear has never heretofore been applied to locomotives in this country, many readers of the *Railroad Gazette* will no doubt be interested in the engravings, published herewith, which show the construction of a gear of this kind used on the new Pennsylvania Railroad engines, which have been illustrated in the last three numbers of this journal.

Fig. 1 is a side elevation, and fig. 2 a plan of a portion, and fig. 3 a transverse section of this gear, and figs. 4 to 14 show some of the details of it. In fig. 1 *A* is a steam cylinder and *B* a cylinder filled with oil or other liquid. Each of these cylinders has a piston, the two being connected together by their piston-rods *C C*. These rods are also connected to a lever *DEF*, which works on a fulcrum *F*. The lower end of the lever is connected to the reverse rod *FG*, the front end of which is attached to the vertical arm of the lifting or reverse shaft. It will readily be seen that if the piston in *B* is free to move and steam is then admitted to either end of the steam cylinder *A* the two pistons will be moved in a corresponding direction, and with them the lever *DEF* and the other parts of the reversing gear. A valve *H*, shown in enlarged section by figs. 4 and 8, is provided, by which communication is opened between the cylinder *A* and the steam inlet pipe shown in fig. 1. Another valve *I*, shown on an enlarged scale by figs. 4 and 5, is placed between *H* and the cylinder *A*, by which the steam may be admitted either into the front or back end of the cylinder. It will be apparent, though, that if the piston in *A* is thus moved, and the reverse gear placed in any required position, some provision must be made to hold it there securely. This is accomplished by the oil cylinder and piston *B*. To it a valve *J*, shown on an enlarged scale by figs. 9, 10 and 11, is provided, by which communication between the front and back ends of the cylinder may be opened or closed. It is evident that if the piston *B* is in any given position, and both ends of the cylinder are filled with liquid, the former will be held securely in any, if the liquid in one end cannot flow into the other. If, however, communication is opened between the two ends, then a pressure exerted in the piston *B* will cause the liquid to flow from one end of the cylinder to the other, and thus permit *B* to move in whichever direction the pressure is exerted.

*R* is the reverse lever made in the form of a bell crank, the short end of which works in a slot *C*, in the upper end of a shaft or spindle *cd*. This shaft is inclosed by a tubular shaft *S*, to which the fulcrum of *R* is fastened. The tubular shaft has an arm *b*, shown by dotted lines in the plan, fig. 2. The reverse lever has two movements, the one to raise the end up, as indicated by the dotted line *g*, and the other to turn on the axis of the tubular shaft. The arm *b* on the latter is connected by a rod *h/h*, with the valves *J* and *H*. The lower end of the shaft *cd* is connected with a tell crank *f*, which, in turn, is connected by a rod *kl* with the valve *I*. Therefore, by turning the lever *R* so as to partly revolve the shaft *S*, the valves *J* and *H* may be opened or closed, and by raising up the lever *R* in the path *g* the valve *I* may be moved to admit steam to the front or back end of *A*. To reverse the engine, therefore, the lever *R* is turned so as to open the valves *J* and *H*. This permits the liquid in *B* to flow from one end to the other, and *H* admits steam to *A*. Now, by reversing the end of the reverse lever *R*, the valve *I* is moved so as to admit steam to either end of *A*, the pressure in which will move the reverse gear to the desired position. When this is done the valves *J* and *H* are closed. This prevents the fluid in *B* from flowing from one end of the cylinder to the other, and thus securely locks the piston *B* in the position it may happen to be in, and at the same time the valve *H* shuts off steam from the cylinder *A*.

The bar *K* is graduated (shown in fig. 2), to indicate to the locomotive runner the position of the reversing gear.

This apparatus enables the reversing gear to be handled with the utmost facility, and with almost no exertion on the part of the engineer. The engine can be reversed almost instantly, and it can be graduated with the most minute precision.

### The Early History of Railroad Signals and Telegraphs.

Nearly one-half of the late Baron von Weber's work on "Railroad Signals" is devoted to the history of the development of signals and telegraphs, which was evidently prepared after great research, and is made specially valuable and suggestive by the author's criticisms and acute observations, which show that he understood man as a perceptive creature as well as the codes and apparatus made for man's observation. We begin below a translation of a portion of this part of the work:

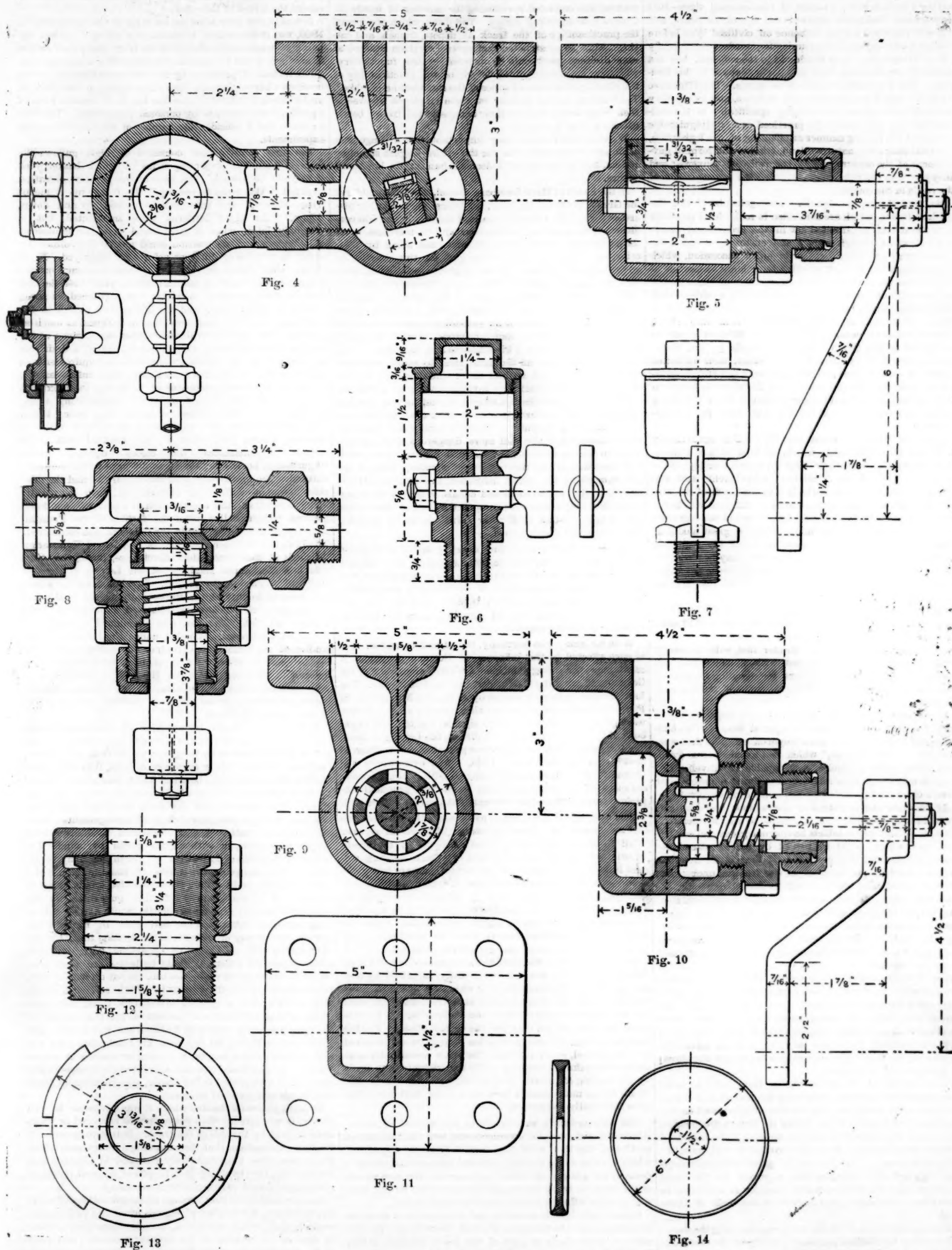
[Translated for the *Railroad Gazette*.]

The railroad, in the form in which it now serves the interests of our everyday world, dates its existence from no other period than the opening of the Liverpool & Manchester Railway in the year 1825. All before that was a mere embryonic existence, without a definite vital development of the members of the entire body.

It found optical telegraphy, the origin of which dates from the labors of the Brothers Chappe in 1793, already fully developed, and its progress has been almost parallel with that of the electric telegraph.

Thus, the demands of the railroad for means of communication with distant points, as they increased in proportion to the growth of traffic and the demand for greater regularity and security of service, were almost kept pace with by the progress of the electric telegraph. This means of writing





### DETAILS OF STEAM REVERSING GEAR

at a distance, so necessary for railroad purposes, may be classed according to its nature under two very distinct heads; the means of expressing oneself at an distance on any subject, as circumstantially as may be desired—i. e. really in talking at a distance; and in the means of communicating a certain idea by means of conventional signs—that is, signals. Railroads attained the age of 12 years, and already exercised a great influence on civilized life, before the need of telegraphic communication made itself forcibly felt. Telegraphy, as a handmaid to the railroad, has not assumed any enduring form peculiarly adapted to this business. But it is quite otherwise with signals. The latter have been developed in a great variety of forms, and though they may all be recognized as belonging specifically to the railroad service, they are, to the practiced eye, distinguishable in a most interesting manner as offspring of the legislation, national character, nature of land, climate and form of government of the country which the railroads traverse; and they proclaim the principles governing the arrangement of the roads in the country.

So, for instance, the signaling arrangements of the English railroads, which are forbidden to make level crossings over the streets, are situated low in the ground and run to a great extent through tunnels and cuttings, on which the trains hurry one after another in quick succession, which are operated in a climate in which for a large proportion of the days of the year the range of sight is confined to the narrowest limits, and which are managed by a cold-blooded, calculating people, brought up under the strengthening influence of the maxims, "self-help" and "look out;" such a system would be developed in quite a different direction from that of the North German railroads on the Baltic plains, with their countless level crossings, their unlimited extent of straight lines and comparatively few trains, growing up under the distinct tendency of the German people to look for security and a directing guidance from the ruling powers in most relations of life and in the majority of transactions.

It will be still more evident that they will be again totally different from the roads which, situated high in a mountainous country, wind their way through the valleys of the Alps and Carpathians on mighty embankments and viaducts and the operation of which is in the hands of the sanguine South German races; and again different will be the lines operated by the clear-headed, practical but ingenious and highly-polished Frenchman. What a great modification a single circumstance may have on the signaling system of the different roads in a country may be observed, where in one district the law calls for the inclosure of the entire extent of the road, while this is not the case in other provinces.

On the oldest English railroads, on the majority of which but one locomotive traveled at a maximum speed of 11 miles an hour, signals were not considered necessary.

Even the Liverpool & Manchester line, with its totally different rolling stock, was opened without them and was even, as we shall see later, without the signaling instrument that is now regarded as peculiarly the voice of the railroad, the steam whistle.

Huskisson's death at Parkside, although not caused by a lack of signaling arrangements, opened George Stephenson's eyes to two facts of great importance. The first was, that his "Northumbrian," which had to carry the dying man fifteen miles to Eccles, was capable of traveling 36 English miles in an hour and that this flying monster must have a clear road provided by still swifter messengers.\*

At the exits and entrances of the stations and deep cuttings through which it was impossible to see, he therefore erected, on high poles, tablets having one green and one red side, and which could be turned by special attendants stationed below for that purpose.† If these latter saw that the track into the cutting or depot was free and unobstructed, they would place the disk with its sharp edge to the approaching train. If they considered slow speed desirable, they turned the green side to the train; the red if it should come to a complete halt at once. At night, on these revolving poles lanterns were lit, with two white sides, one green and one red side, which were employed in the same manner as the day signals.

It must be remarked here, however, that trains running at night were first considered permissible in 1836, seven years after the road was opened. In the same manner the employes intrusted with the maintenance of the track were provided with small flags of green and red stuff, with which they were enabled, any where they might think advisable, by sticking the flags up or swinging them, to give the signal for going slowly or stopping.

The arrangement of signals visible from point to point along the entire line and proclaiming the approach of trains, etc., was also considered by George Stephenson,‡ as was communicated directly to the author by Robert Stephenson, who, acting as engine-driver at the opening of the Liverpool & Manchester Railroad, drove the locomotive "Phoenix."§

The acute practical intellect of the great self-made engineer rejected the arrangements, *a priori*, for the same reasons as those for which we now consider it advisable to reject them, after experience has cost us hundreds of thousands.

He comprised them all in the pithy words telling the story: There must be mischief in notices passing by so many unskillful hands. We shall see later how, reflecting this idea of Stephenson's, the English signaling system developed itself according to a corresponding principle.

\* I. I. Smiles' Life of George Stephenson, London, 1857.

† France's: History of the English Railroad, London, 1855.

‡ Original communication to the author by Robert Stephenson in the year 1852.

§ Smiles' George Stephenson, 267.

In this form, signals were adopted by the earliest railroads that were built in England, the London & Birmingham, the Manchester & Sheffield and the Great Western. In the first named, a great improvement was made; it was introduced by Robert Stephenson in the spirit of his father's maxim, and consisted in reducing the number of hands intrusted with signaling duties. The disks, which announced the practicability of the track at depots, tunnels and cuttings, were so constructed that several of them situated at some distance apart could be operated by one functionary, who from his position could determine the practicability of the road or who received notice of the same from a neighbor. The decrease in the number of these employes allowed of their being better paid, of their being selected from a better educated class of people.

We shall discern later how important this arrangement of Robert Stephenson was for the entire English signaling system, how it has become indeed the basis of its innermost nature.

In the hands of Mark Isambard Brunel, the gifted builder of the Great Western Railway, signaling made another progressive step. He correctly realized that, under certain conditions of light, all colors disappear, and he therefore made the position of the disks recognizable, not alone by their color, but chiefly by their form, and for this purpose he gave his signals, for each of their positions, a different, often very remarkable, optical configuration. Already in the year 1835, Leopold of Belgium, one of the greatest peaceful potentates that ever existed, having had a scheme drawn up by the two Stephensons for extending a net work of railroads over his prosperous country, carried his great ideas through, in spite of his ministers and chambers. Unfortunately he began at the same time to make railroads state institutions, and so laid the foundation for an undoubted obstacle to their free development on the continent.

The first Belgian railroads, running almost entirely through wide plains, differ characteristically from the English roads by the admission on them of countless level street and railroad crossings and the still more dangerous draw-bridges over the canals; they would thus, to a certain extent, have been forced to extend their system of signaling had not the government at the outset subjected the railroad traffic strictly to that on the roads and canals, so that it often happened that long trains were compelled to halt at street crossings or open bridges until after farm wagons or creeping canal boats had slowly passed.

But it was the fog in the low, damp grounds that caused the appearance of the first acoustic signal on the railroad, after the steam whistle, in the shape of the signal horn, and which, in the prevailing spirit of the law, was furnished to the crossing and draw-bridge watchmen more for the protection of the public than for signaling trains for the convenience of the trainmen.

With its entry into Germany, the signaling system was at once affected by the influence of German prophylactic carefulness, the ruling principle of construction, alike of the German railroads and the German national character. The first German railroad operated by steam, the Nuremberg & Firth Railroad, a small line running through a flat country, was operated practically without signals; but the first signal book of the first great German railroad, the Leipzig & Dresden line, which is at the same time probably the first signal book\* ever printed, dated 1838, shows everywhere the traces of these influences, and mingled with them, theoretical speculation, often founded on insufficient practical experience, and from which German technical life suffers still.

This little signal book, issued even before the whole of the line was completed, already contains 24 forms of signals.

All these signals, except those produced by the steam whistle, were made with a flag and a lantern showing colored lights. These simple signals would perhaps have sufficed, to the great benefit of German railroads, until the way had been prepared by the study of practical arrangements and experience, for the construction of a really practical system of signaling; that is, had it been possible under the then existing conditions to have given the traffic the regularity that we now see almost universally attained.

But the staff, from the chief to the trackman, learned their duties then by practice, and were daily surprised by new and unforeseen occurrences, with which we are now quite familiar. The switches, crossings and street crossings were far less secure in construction than at present, the locomotives were constructed only for the consumption of English coal, and when the administration urged the employment of German fuel, every run made for years resembled a more or less successful experiment. The experiments thus made by the Leipzig & Dresden road at that time for the benefit of all future undertakings were of a value that has never been sufficiently recognized.

The extraordinary uncertainty in the arrival of trains, which inflicted much inconvenience and now and then caused accidents, together with the careful German disposition, which aims at doing nothing without preparation, caused a demand for a better method of announcing the movements of the trains to track watchmen and the station service than was possible with the above-described hand-signals.

Sound,† which calls attention and which extends in all directions, appears to recommend itself theoretically for this purpose, particularly as most of the lower officials, having been soldiers, were necessarily accustomed to the recognition of horn-signals. The section watchmen were, therefore, provided with clear-sounding horns, but the first experience in stormy weather showed that the chain of sentries would

\* Records of this road, Vol. I.

† Original communication of the authorized officer of the Leipzig & Dresden Railroad, Herr Busse.

have to be much too close to insure the transmission of the signals with any certainty. Further experiments were then made with expensive systems of bell-pulls, which were to lead along the line from one watchman to another. The difficulty of setting such long, unskillfully laid wires in motion caused the wreck of this effort.\*

Not until the year after the opening of the whole road in 1840, was it determined to construct a series of optical signaling arrangements, which, visible from one watch station to another, would be capable of transmitting a passing sign.

But instead of profiting by the theory established by the brothers Chappe through their experiments, it was thought preferable to endeavor to discover the most suitable form of signaling arrangements by personal experience. The consequence was a considerable number of unsuccessful, costly experiments.

The first contrivances consisted of high, gallows-like frames, from the projecting arms of which basket-work balls could be hoisted. The balls at the greatest elevation signified "The train is coming." Half way up it meant "Run slowly," and continuously moved up and down, "Stop." At night lanterns were substituted, but it was only later, when it was found that the movement of a lantern and its position could not be determined by night, that lights of different color were employed. Night signals were comparatively very seldom necessary on the Leipzig & Dresden Railroad, as until the year 1843 the first train in either direction in winter was dispatched at seven o'clock in the morning and the last at two o'clock in the afternoon, so as to limit traveling in darkness as much as possible. The rapidity with which these signs, given at the regular period, traversed long distances, caused a desire for an increase in the sign-language, and the requirements of traffic seemed to urge the same thing. But, unfortunately, the basket signs were incapable of rendering more explicit signals, if it was wished to avoid complicating them, as has here and there occurred in later times. This gave rise to the employment of hoisted disks of different colors, and, when it was realized that under certain circumstances the colors became undistinguishable, boards and tablets of different forms were substituted. The inconvenience of this apparatus and the mischief wrought with it by storms, etc., soon caused its abandonment, and the construction of a complete and independent telegraph line, after the fashion of the Prussian state telegraph between Berlin and Coblenz, was considered. The Locomotive Superintendent of the Royal Hanoverian railroads at that time, Herr Kirchwege, during his time also first Mechanical Engineer of the Leipzig & Dresden Railroad, worked up the project. Invalids (disabled veterans) were to do duty at the thirty stations, the total working expenses of which were estimated annually at 2,433 thalers† (\$1,700). The idea was abandoned as unsuitable for railroad purposes. Whether under the influence of the studies of the Prussian telegraph or not is no longer to be decided, but in 1843, on a proposition of the operating director of the road, Frederick Busse, a signal apparatus was constructed having two arms and an arrangement for hoisting a lantern, or two one over another, such as is still in use on many railroads.

With reference to the introduction of this arrangement and the opinion respecting the necessity and utility of the actual communication by telegraph to be thus established, Germany became rather curiously divided into two great parties, the dividing line between which was almost formed by the southern boundary of Saxony, the Main and the Rhine. The majority of the roads north and east of this line employed the semaphore telegraph arrangements; those situated to the south and west contented themselves with simpler appliances, or with signals given by hand. The critically inquisitive disposition of North Germany recognized in the arrangement a means of communicating at a distance which, swifter than the locomotive, would hurry in advance of it and furnish a further guarantee for the security of travel. The more volatile South and West German character, taking a more easy view of the circumstances, was openly proclaimed in the decision that, instead of troubling with an extensive apparatus of admitted but seldom exercised utility, it would be better, in such cases where it would prove really needful, to put up with a little inconvenience and so do without it. With reference to the other signals that originated about this time, they were confined to an adaptation to the uses of the train-hands of the signals hitherto employed by the track watchmen. The conductor swinging his cap over his head called for a low rate of speed, and if he gave it a circular motion it meant "stop." It was Busse who also appointed the tender-watchman, i. e., a man posted in the tender, who continually faced backwards and watched the train.

To mark places on the line where it was advisable to run slowly, it was already then customary to erect red or white disks or flags by the side of the track. It is strange and difficult of explanation, that the signaling arrangement which was at that time almost the only one used in England and France, viz., the revolving disk, in spite of its great practical advantages, found no recognition in Germany.

Quickly, and often only through imagined notions of what was necessary, the number of signals usual on a railroad increased; some, when introduced, were soon sanctioned either by custom or because of the seeming necessity; and part were permitted to exist through fear of responsibility, which was caused by contact with the processes intended to increase security, though often in spite of judgment.

It is as a rule very difficult to determine with certainty how and where certain signals came into employment, but

\* It was afterward successful on the Taunus Railroad.

† Records of the Leipzig & Dresden Railroad Company Vol. I.



it is certain that the signals attached to trains at night to mark their beginning and end were introduced with the first locomotives and cars brought from England, which were provided with fixtures for attaching the necessary lanterns. The automatic signals at the switches, showing their position with regard to the track, were, as far as is known, first introduced by Herr Mohn, builder of a portion of the Berlin & Anhalt Railroad (now consulting engineer in Hanover).

(TO BE CONTINUED.)

### Claims for Lost Baggage.

[From a forthcoming work by Marshall M. Kirkman on the "Baggage, Mail and Express Traffic of Railways."]

The complications of the baggage service are manifold. The business must not only be expeditiously and simply performed, but it must be accurately fulfilled. While the railroad company cannot enforce regulations contrary to the comfort and convenience of the traveler, it must, at the same time, carefully guard and correctly forward any property he may trust to it; this is the *sine qua non* of the service. It is never a legitimate compensation for the loss of an article by a railway company, or the sending of it astray, that the carrier is able or willing to pay for the property. He is bound to provide in advance every necessary and reasonable precaution against the occurrence of such accidents. It is not enough that he pay. He must prevent losses and forestall irregularities of every description. No valuation that a traveler can conscientiously put upon his personal effects will ever adequately represent to him the full measure of their value if lost. The incidental or constructive damages he suffers cannot be recompensed to him, and their enumeration would only excite laughter. This is well understood. In the presentation of his claims against railway companies he consequently wisely refrains from attempting to name or classify them. Yet the loss is none the less a real one to him, and its unsatisfactory settlement continues to fester in his bosom long after the matter has passed from the memory of the other party to the transaction.

In making up a bill of costs for property lost or damaged, the number of days or hours of delay that a traveler suffers in consequence he can compute, but the innumerable expenses incident thereto, such as the cost of the stationery expended in correspondence, the telegrams he sends, the numerous and tiresome journeys he makes backwards and forwards while pursuing his inquiries, and the vexation and uncertainty that attend the delay in ascertaining definitely the loss of his goods, and in settling the same with the carrier when the loss has been definitely ascertained, cannot be estimated, much less paid for.

In the operation of the baggage department it often occurs that the owners of the property supposed to be lost are so overjoyed at its discovery that they refrain from making any reclamation whatever upon the railroad company for the expenses they have been put to in consequence of its supposed loss.

When property that is lost cannot be found the valuation that the owner is able conscientiously to put upon many articles of great value to him personally is at best merely nominal. While such articles represent to him perhaps a value equal to articles that are entirely new, or even perhaps of better quality, nevertheless he can embrace them in the schedule of loss only at their actual marketable value. The hardship he suffers is thus aggravated by a direct and unavoidable pecuniary loss. Aside, however, from the inconvenience and the monetary loss that a passenger suffers under the circumstances named, he also loses in many cases, as we have already suggested, articles which are to him of much more value than those for which he receives pay, but which have no value whatever that the customs of business men can recognize or compute. These are of necessity omitted from his inventory, and herein lies one of his grievances.

Many other peculiarities attending the losses engendered by an imperfect system of handling baggage might be mentioned. And it may be noted further in this connection that while every loss entails a direct and positive expense to the carrier as well as to the patron, the fact in no way serves to mitigate the feeling of annoyance experienced by the latter.

The existence of the evils that engender the losses that occur in connection with the baggage department of our railroads is rarely known or suspected by the people they affect. And in this connection it is interesting to note, generally, that the losses and inconveniences to which a community may be subjected, through loose and incoherent methods of doing business on the part of those delegated to serve it, usually occur without the community itself being aware of the extent of the evil, if indeed they are conscious of it at all. The relative facilities offered by the railway enterprises of Europe and America, to which reference has already been made, admirably illustrates this. It is not only visible in the relative accommodations and business facilities afforded under each, but it is apparent, though in a less degree, in the respective methods of accounting adopted by the different railroad companies for the settlement of claims. In every country there is more or less of a disposition noticeable on the part of officials to overrate the willingness of the carrier to pay for the losses and damages for which he is responsible. At the same time they underrate the inconvenience and losses that the patron suffers in the adjustment of such claims. This feeling does not arise from any intentional disregard of the rights of the public; it is simply an oversight—an official egotism. It is, however, none the less unfortunate on that account.

In the adjustment of claims it will often occur that an advantage gained by the carrier will in the end prove detrimental to his interest; the advantage of numbers and expression of opinion is with the community, and any advantage taken of its members will, per consequence, redound to the injury of the carrier; the latter cannot for this reason, if for no other, afford to sanction any act upon the part of his agents that is not fair as between man and man, no matter how great the temporary gain may be.

The officials who represent our railroad companies in the settlement of claims, no matter in what department they may arise, should appreciate fully this fact, namely, that no award that they are likely to make, if founded upon an honest statement of the facts connected with the matter, will ever adequately recompense the claimant for his loss. And the fact that this is so naturally suggests the requirement that should be enforced by each company upon its servants in this particular department of the service, namely, first, that they shall adopt every reasonable and proper means of preventing property being lost while in the possession of the carrier, and second, that when accidents occur they shall extend to the claimants every accommodation in their power to facilitate the easy and expeditious settlement of their claims. So wise and just a course as this, it is obvious cannot do otherwise than cement more closely the intimate and cordial relations that should always exist between the community and its servant, the carrier; while a contrary policy,

no matter whether it arises from ignorance or design, will, it is equally obvious, have the effect to embitter the community against the companies, and prepare them to suggest or acquiesce in measures of injustice that would not otherwise occur to them.

The want of tact and the arrogance of men in authority precipitates the destruction of the power they exercise more often than the acts of injustice that they commit. Much of the trouble that has arisen in the past between the community and the railroad companies is undoubtedly to be ascribed to the indifference and the haughty superciliousness of the servants of the latter, and to their neglect to employ in their intercourse with the public those simple acts of courtesy and good breeding that are customary elsewhere among civilized men. It is a noticeable fact in human nature that men are everywhere quick to respond to the friendly advances of those in official position. At the same time they are not less quick to punish those who ignore them or treat them discourteously. The peculiarity which I refer to in the conduct of the servants of the railroad companies arose (for it is largely a thing of the past) not so much from any intention or desire to treat those with whom they came in contact discourteously as it did from ignorance. This ignorance was partly the result of defective education and partly the penalty that falls upon men long accustomed to the exercise of arbitrary power. And while its entire effacement may never be wholly possible, still its deformities can be greatly lessened by the exercise of a judicious care on the part of the owners and responsible managers of the railroad companies.

In saying that every facility should be offered for the adjustment of claims against our railroad companies, I do not wish to be understood as intimating that the precautions necessary to prove the authenticity of such claims should be neglected, or the common principles of business usually observed in such cases disregarded. It is against any disposition upon the part of the officials in charge to unnecessarily aggravate these precautions, and thereby retard the progress of business, that protest should be made by everyone, and especially by the owners of railroads.

The settlement of a claim, it may be remarked, should as nearly as possible be coincident with its occurrence. In the majority of instances delay is pregnant with costs to the carrier. It invites unfriendly reflections, suggests combinations, and brings prominently into the transaction that prince of middlemen and disturber of values the lawyer. At no other time is a claimant so happily disposed to settlement upon mutually satisfactory terms as the period of the loss. Every moment that the adjustment of his claim is deferred irritates and enrages him, and from being in the mood to settle upon amicable terms he comes in time to seek, rather, a pretext for strife, so that when a settlement with him is finally effected the opportunity of the railroad company to cement his friendship and forever bind him to its interests has been lost. The good will that an appearance at least of spontaneity upon the part of the carrier would have produced has been frittered away, and when the claimant comes finally to receive his money it is sullenly and without thanks or other expression of kindness.\*

In connection with the subject of claims and in considering the desirability of railway companies exercising all possible celerity in the settlement of the same, the community must not, however, disregard the inevitable obstacles that carriers have to contend with in such matters. The peculiar position occupied by them must never be overlooked in attempting to estimate the measure of their responsibility to the public in particular instances. The individual business man or the member of a firm may, without delay or circumlocution, personally examine and pass upon each and every claim that is presented to him. Their number does not preclude his doing this quickly and effectively, with little or no risk of deception being practiced upon him. His familiarity with the facts and his experienced judgment and personal interest enable him to decide upon each case as it arises. With the railway company it is different. Its transactions of this nature are innumerable, complicated and so widely scattered that they pass at once beyond the comprehension of a single person. Besides this, a railroad company is unable to act like the individual man, through a proprietor present on the ground and personally interested in effecting an advantageous settlement. It must, on the contrary, transact its business through a hired agent, whose responsibility, like his interest, is necessarily more or less circumscribed. The extent to which a servant may act purely upon his judgment is of necessity extremely limited. In everything he does he is governed by precedent, by the routine of his office; and by the necessity of accumulating evidence in each case that will subsequently substantiate, if necessary, any action he may take. He must not only know in every case that the claim he pays is just, and one that ought to be paid, but he must before paying it be prepared to demonstrate the correctness of his action in the event that he should be called upon so to do. It is this peculiar feature of his position that makes the railway officer so exceedingly circumspect in all he does; and if he is sometimes too cautious, too difficult to satisfy, the community in judging him should not forget the perplexities under which he labors.

The peculiarities that we notice in the railway official in this particular department of his business, it is to be observed, are even more aggravated with the officers and employees of the government under similar circumstances. The latter may be said to have practically no discretion whatever in anything that they do, their acts being in every case circumscribed within the rigid confines of laws arbitrarily formed for the government of the particular offices they fill. The result is that the circumstances under which they labor soon disqualify them for the exercise of offices of personal responsibility of a discretionary nature for which no precedent or law exists for their government. A transfer of the railroads to the government would not, therefore, in any sense lessen any of the difficulties that the community at present experience in securing the prompt and satisfactory adjustment of claims against the railway companies. On the contrary we may believe that the circumlocution that now exists would be greatly and inevitably aggravated by such a transfer, and that what is now only an inconvenience would under such a state of affairs become a burden. The officers of railroad companies may be, and are frequently, allotted discretion more or less liberal in its nature in acts that affect directly the convenience and the interests of individual members of the community. This is especially true in reference to the settlement of claims, but it is obviously impossible that any such discretion should be accorded officers of the state under any methods of administration likely to be adopted by it for the government of railroads.

The organization of a railroad is such as to enable its pro-

\* On many of our best managed roads it has become the practice to employ efficient and adroit claim agents, whose sole duty it is to attend promptly to every species of claim incident to the transportation business. Where these agents have been employed and provided with proper authority and facilities for carrying on their business it is remarked that the amount paid by the railroad companies for losses, compared with companies depending upon other methods, is much less, while the community in the former case is gratified and obliged at the disposition and ability of the companies interested to afford immediate and just remuneration for its losses.

rietors to scrutinize the acts of its management with more or less intelligence, and it is possible, in consequence of this, to permit the latter to exercise a considerable latitude in the discharge of their duties in cases of emergency. This necessary and beneficent supervision of the principal is lacking in the functions of the government service, or is at best perfunctory in its nature. In consequence of this all the details of the latter service are carefully and minutely described in the regulations creating the office. The result is that in all the relations of a business character that the community have with the officers of the government, they are hedged about by innumerable technical rules and regulations, extremely vague in their nature to all but the officer himself, yet of the most minute and exacting character, which neither the discretion nor the disposition of that officer inclines him to mitigate in favor of the individual citizen. He is the autocrat of the people as a whole, and is appointed to jealously guard their interests. But the power he exercises and the restrictive limitations of his office all combine to constitute in him a prosecutor instead of a conservator of those who are so unfortunate as to have relations of a business nature with him. The fault is not with the officer. It is the misfortune of the system, and inseparable from its operations. If this is not true, let those who have claims against the government refute it.

Corporations like those of government and railroad companies have not only to provide against every contingency of misrepresentation and subterfuge upon the part of those with whom they have dealing, but they must, coincidentally therewith, enforce such elaborate and carefully prepared safeguards and precautions as may be necessary to serve as a protection against the machinations of the evil disposed, if any, among their own employees. It is the conjunction of these two important yet diametrically opposite elements in the organization of great corporations that so elaborates them and otherwise has the effect to render their successful operation a matter of such great difficulty. The checks and balances that they are compelled to enforce have the effect to magnify all their acts, and to surround the individual performance of their servants with an air of reserve and preconceived deliberation that is at once puzzling and annoying to those who do not understand aright the reasons that occasion it. In consequence of these disturbing elements, so obviously impossible to avoid, the transactions of business become in practice either greatly magnified or greatly dwarfed. Thus trivial affairs, that would occupy hardly a thought in the life of a merchant, assume with the affairs of a railway company an importance that calls for the accurate fulfillment of every check and safeguard made and provided for the government of his business under the most trying circumstances. On the other hand, matters of great pith and moment, involving perhaps millions of dollars, are consummated by him under exactly the same circumstances and with the same machinery, without especial thought being bestowed upon the subject by anyone in consequence of their exceptional magnitude; this is so for the reason that the duty and the responsibility of the servant is the same in either case; and thus it is that transactions greatly disproportionate to each other assume an equal importance in the systems that animate and control the bulk of the details connected with the management of railroads and governmental affairs.

### A New Method of Keeping Mechanical Drawings.

[A Paper by Chas. T. Porter, Read before the American Society of Mechanical Engineers.]

The system of keeping drawings now in use at the works of the Southwark Foundry and Machine Company, in Philadelphia, has been found so satisfactory in its operation that it seems worthy of being communicated to the profession.

The method in common use, and which may be called the natural method, is to devote a separate drawer to the drawings of each machine, or of each group or class of machines. The fundamental idea of this system, and its only one, is, keeping together all drawings relating to the same subject matter.

Every draughtsman is acquainted with its practical working. It is necessary to make the drawing of a machine, and of its separate parts on sheets of different sizes. The drawer in which all these are kept must be large enough to accommodate the largest sheets. The smaller ones cannot be located in the drawer, and as these find their way to one side or to the back, and several of the smallest lie side by side in one corner, any arrangement of the sheets in the drawer is out of the question.

The operation of finding a drawing consists in turning the contents of the drawer all up until it is discovered. In this way the smaller sheets get out of sight or doubled up, and the larger ones are torn. No amount of care can prevent confusion.

Various plans have been adopted in different establishments intended to remedy this state of things, but it is believed that none has been hit upon so convenient, in all respects, as the one now to be presented.

The idea of keeping together drawings relating to the same machine, or of classifying them according to subject in any way, is entirely abandoned, and in place of these is substituted the plan of keeping together all drawings that are made on sheets of the same size, without regard to the subject of them.

Nine sizes of sheets were settled upon, as sufficient to meet our requirements, and on a sheet that will trim to one of these sizes, every drawing must be made. They are distinguished by the first nine letters of the alphabet. Size A is the antiquarian sheet trimmed, and the smaller sizes will cut from this sheet, without waste, as follows:

A, 51 x 30 in.; B, 37 x 30 in.; C, 25 x 30 in.; D, 17 x 30 in.; E, 12½ x 30 in.; F, 8½ x 30 in.; G, 17 x 15 in.; H, 8½ x 15 in.; I, 14 x 25 in.

The drawers for the different sizes are made 1 inch longer and wider than the sheets they are to contain, and are lettered as above. Those of the same size, after the first one, are distinguished by a numeral prefixed to the letter. The back part of each drawer is covered for a width of from six to ten inches, to prevent drawings, and especially tracings, from slipping over at the back.

The introduction of the blue-printing process has quite revolutionized the drawing office, so far at least as we are concerned. Our drawings are studies, left in pencil. When we can find nothing more to alter, tracings are made on cloth. These become our originals, and are kept in a fire-proof vault. This system is found admirably adapted to the plan of making a separate drawing for each piece. The whole combined drawing is not generally traced, but the separate pieces are picked out from it. All our working copies are blue prints.

Each drawer contains 50 tracings. They are 2½ in. deep, which is enough to hold several times as many, but this number is quite all that it is convenient to keep together. We would recommend for these shallower drawers.

Each drawing is marked in stencil in the lower right-hand corner, and also with inverted plates in the upper left-hand corner, with the letter and number of the drawer, and its own number in the drawer, as, for example, 3 F - 31; so that whichever way the sheet is put in the drawer, this ap-



pers at the front right-hand corner. The drawings in each drawer are numbered separately, 50 being thus the highest number used.

For reference we depend on our indices. Each tracing when completed is entered under its letter in the numerical index, and is given the next consecutive number, and laid in its place.

From this index the title and the number are copied into other indices, under as many different headings as possible.

Thus all the drawings of any engine, or tool, or machine whatever, become assembled by their titles under the heading of such particular engine or tool or machine. So also the drawings of any particular part, of all sizes and styles, become assembled by their titles under the name of such piece. However numerous the drawings, and however great the variety of their subjects, the location of any one is, by this means, found as readily as a word in a dictionary. The stencil marks copy, of course, on the blue prints, and these, when not in use, are kept in the same manner as the tracings, except that only 25 are placed in one drawer.

We employ printed classified lists of the separate pieces constituting every steam engine, the manufacture of which is the sole business of these works, and on these, against the name of every piece, is given the drawer and number of the drawing on which it is represented. The office copies of these lists afford an additional mode of reference, and a very convenient one, used in practice almost exclusively. The foreman sends for the prints by the stencil marks, and these are thus got directly without reference to any index. They are charged in the same way, and reference to the numerical index gives the title of any missing print.

We find the different sizes to be used quite unequal. The method of making a separate tracing of each piece, which we carry to a great extent, causes the smaller sizes to multiply quite rapidly. We are marking our patterns with the stencil of the drawing of the same piece; and also, gauges, templates and jigs.

It is found best to permit the sheets to be put away by one person only, who also writes up the indices, which are kept in the fire-proof.

We were ourselves surprised at the saving of room which this system has effected. Probably less than one-fourth the space is occupied that the same drawings would require if classified according to subjects.

The system is completely elastic. Work of the most diverse character might be undertaken every day, and the drawings of each article, whether few or many, would find places ready to receive them.

### THE SCRAP HEAP.

#### A Railroad Relic.

The Atlanta Constitution reprints the following relic of old times in the shape of a freight bill issued for the Georgia Railroad 41 years ago:

#### THE GEORGIA RAIL-ROAD

Will be opened to Buck-Head, 6 miles east of Madison, on or before the 30th September.

G. H. THOMPSON,  
Receiving and Forwarding Agent.

#### RATES OF FREIGHT AND PASSAGE

Between

AUGUSTA AND BUCK-HEAD.

All articles of merchandise not enumerated below, per 100

pounds.....\$ 40

Cotton Gins and Fans, each..... 3.50

Straw-Cutters, each..... 2.00

Ploughs and Wheel-Barrows, each..... 1.00

Barouches, Buggies and Wagons, each..... 9.00

Cose Carriages, each..... 12.00

Gigs and Sulkeys..... 7.00

A single Horse, Mule, Cow or Ox, each..... 12.00

Two to Five Horses, Mules, Cows or Oxen, each..... 7.00

Six or more..... 5.00

Sheep, per half-dozen, each..... 6.00

Furniture, packed in boxes, per cubic foot..... .09

Chairs, each..... .25

Rocking Chairs, each..... .50

Flour, Potatoes and Apples, per barrel, each..... .90

Lime, per barrel, each..... 1.20

Cotton, in round bales, not exceeding 375 pounds in weight

and 7 feet 9 inches long..... 1.70

Cotton, in square bales, not exceeding 425 pounds in

weight..... 1.70

All bales weighing more than the above rates, per 100

pounds..... 45

All bales measuring more than the above dimensions, to be

charged for the excess in length, per foot..... 20

Specie, per 100 dollars..... 25

Passenger and Baggage..... 5.00

Children under 10 years..... 3.00

Negroes..... 3.00

Dogs..... 3.00

No Package taken by the Passenger Train for less than..... 50

No single Package taken by the Freight Train for less than..... 25

#### GUNPOWDER PROHIBITED.

The Company will not be responsible for leakage of Liquids, or

breakage of Glass and Crockeryware.

Planters are requested to mark their names on each bale of

Cotton, and send a written statement of the number of Bales, and

the name of their Consignee in Augusta, to the Agent at Buck-

Head.

All Cotton received in good order at the Depot, and the Bagging

afterward torn, while in possession of the Company, will be re-

paired at their expense. All other damage done to Cotton and

Merchandise, in transit, will be promptly settled at the Transportation

office in Augusta.

Merchandise will be retained at the Depot one week, if the

Agent is instructed to that effect by the owner; otherwise it will

be forwarded to its destination as soon as possible after it is re-

ceived.

Until the Road is opened to Buck-Head, Freight will be for-

warded to Greensboro', at 25 cents per hundred pounds.

All complaints in relation to the business of the Road, or the

Agents of the Company, will be addressed to Richard Peters, Jr.,

Superintendent of Transportation, Augusta, Ga., or to the under-

signed at Greensboro'.

J. EDGAR THOMPSON,  
Chief Engineer and General Agent,

Office Ga. Rail-Road & Bk. Company,  
Greensboro', Ga., July 31, 1840.

The road is now opened to Buck-Head.

#### Boy Train-Wreckers.

The case of the train-wreckers who ditched a Burlington, Cedar Rapids & Northern passenger train two weeks ago near Mt. Auburn, killing engineer Will Hardy, of this city, has been worked up to quite a satisfactory point. The railway officials at once procured the best detective talent Pinkerton could detail as soon as they discovered that the wreck was the result of premeditated work, and started the investigation. Mr. C. E. Stanley, of Chicago, the gentleman detailed to take charge of the case, made Mt. Auburn, the station nearest the scene of the wreck, his starting point, and the Tribune correspondent, who to-day visited Vinton and various other places where any information concerning the wreck and the result of the investigation could be had, gathered the following facts: The boys' names are Joe A. Phillips, aged about 20 years, and George Vredenburg, aged 18. The former had lived with a farmer named Packard, and was considered a sort of tramp before commencing work for Packard. He had worked for his employer about three months. The other boy was brought out from New York four years ago

with several other boys from the New York Orphan's Home. He was adopted by a farmer named Shields, living about two miles from the railroad. The detective met Mr. Shields in the Mt. Auburn depot, and was asked if he knew who had charge of the case, Shields saying that he wished to give his boy a chance to tell what he knew about it. The boy admitted to the detective that they had been plotting against the railway several weeks; that every time they met the subject was talked over. He said that young Phillips came to his house the night of the wreck, and wanted him to go; but he would not, he claims, and says that was the last time he saw Phillips until after the wreck. He admitted freely that he helped plot the deed, but denied strongly having any hand in the matter. Young Vredenburg since his arrest, while firmly denying any complicity in the affair, except that he had talked it over, says that Joe Phillips told him they could get away very easily with a lot of money, and that they could get to Chicago, then to Pennsylvania, and finally get to New York, where they would get revolvers and steel shirts (armors), and they would then go West; that even if caught they would only be in prison a few years. Phillips wanted Vredenburg to take his watch along so they could tell when the 11.30 freight train had passed, and as Phillips started to go he said: "George, meet me at the willows by the track." And George says: "I went in the house and did not go out again that night." Phillips was arrested on the information obtained from young Vredenburg, and in a day or two made a full confession, implicating Vredenburg and himself. He says they had talked the matter over several weeks; that the tools were taken from his employer's (Packard's) house by both of them. They went to the track, took off the fish-plates, moved one rail in, the other out, three inches and spiked them there. Then they threw their tools away and laid down. After waiting an hour and no train coming, they felt sleepy, and George said his people would miss him early, and they started for home, leaving the death-trap set. The confession covers the points mentioned in Vredenburg's talk, and the description he gave of their work, how it commenced, etc. Reading the lives of the James boys incited them to plan the desperate deed, so they say. Shields is firm in defense of his boy, Vredenburg, and will swear that he was not out of his house the night of the wreck. He has full confidence in the boy, and says that during four years he has trusted him with money, and various ways, and never knew him to tell a lie.

Both boys are now in jail at Vinton, charged with murder in the first degree. Phillips will probably plead guilty when their trial occurs at the next term of court, but the Vredenburg boy will have a defense. The railway company is ably represented by Mr. G. W. Burnham, of Vinton, one of the prominent attorneys of the state, partner of the Hon. J. D. Nichols, State Senator.

There is not so much excitement as before the capture of the villains, and the threats of mob violence have subsided.

Phillips is a surly, thick-set fellow; Vredenburg is slim, with a pair of snake-like eyes very close together. They both have the nerve of old stagers. It is believed quite generally that they are both guilty, though with the defense of Shields it will probably be a difficult matter to convict Vredenburg of murder in the first degree. However, if not found guilty they had better let him out of the back door at night.

The terrible deed that caused the death of one of the bravest boys that ever pulled a throttle, and whose loss is mourned not only by a wife and two small children, but every one who knew Will Hardy, is due to reading the literature that should be abolished in every state in America; and if the brave engineer had jumped instead of reversing his engine and putting on the air-brakes to save the lives of his passengers his own life might have been saved. The wife of such a man should not be allowed to need for anything as long as she lives. It is commendable on the part of the Burlington, Cedar Rapids & Northern Railway Company to take the prompt action they did to find and bring to justice the perpetrators of such a dastardly deed. Mr. Stanley is most certainly expert, and deserves credit for the management of the case as a detective.—Cedar Rapids Correspondent of Chicago Tribune.

#### Fast Time.

On Friday night train No. 8, on the Flint & Pere Marquette Railroad, which is due in this city at 9:15 p. m., was delayed at Flint 15 minutes by some freight cars getting off the track at Otter Lake Junction, four miles north of Flint. The ex-"light weight" of the Herald happened to be on board of the train, and before leaving Flint went forward and climbed upon the engine, expecting that an effort would be made to make up the lost time, and as the run from Flint to this city is only 33 miles, it would take some very fast traveling to make it up on so short a run. The engine was No. 37, one of the largest passenger engines on the road. Engineer Clay Simpson was at the throttle; his brother, Mr. Charles Simpson, handled the black diamonds, and the train was in charge of Conductor Standish. The train pulled out of the station and through the long yard slowly, but as soon as it was out of the city limits its speed was rapidly increased until we were spinning over the rails at the rate of 45 miles an hour. The night was very dark and stormy, and the way that engine ran around curves, climbed grades and then flew down the other side, jumped across trestle works, etc., was enough to scare an inexperienced man out of his wits. The "society editor" ventured a remark to the fireman that they were going pretty fast, who replied that "this was nothing," but to wait till they got to Birch Run and they would begin to fly. That station was reached at exactly 9 o'clock, and as Mr. Simpson called the reporter's attention to the time he remarked that he was "going to let her out a little." It is exactly 16 miles from Birch Run to this city, a good straight track, and everything favorable for fast running. We reached Blackmer, four miles from Birch Run, in five minutes, the run to Bridgeport was made in seven minutes, a distance of 5½ miles, where a stop of one minute was made. The run from the latter station to this city was made in exactly eight minutes, including one full stop at the Detroit & Bay City crossing, the distance being 6½ miles, making the entire run from Birch Run, a distance of 16 miles, in 20 minutes, including two stops. As railroad men all claim that at least two minutes are always lost in stopping and starting, one can readily see that the train was making nearly or quite 60 miles an hour.—Saginaw (Mich.) Herald, Nov. 14.

#### Plans for the New Tay Bridge.

The plans of the proposed new Tay bridge, prepared by Mr. W. H. Barlow, C. E., are now on exhibition in Edinburgh, for inspection by intending contractors. The new bridge, says the London Times, which is to be built on the girder principle, will commence on the south side, about 16 ft. west of the former bridge. At this end four brick arches are shown next the shore, each having a span of 50 ft. The girder work then commences with a span of 118 ft. from centre to centre of the piers, and is continued with 10 spans of 129 ft., and 13 of 145 ft. from centre to centre of the piers, until navigable portions of the channel are reached. Here there are 13 wider

spans, 11 being each 245 ft. and two 237 ft. each. Of these spans the first four are carried to the greatest height of the structure, and give 77 ft. of clear headway above high water mark. From this point the line of the bridge commences to fall toward the north or Dundee side, at a gradient of one in 114, there being one span of 162 ft., ten of 129 ft. 6 in., and one of 127 ft. 6 in. These spans carry the bridge on to the commencement of the curve toward Dundee, and 25 more, each of 71 ft., take the structure to the side of the proposed extension of the esplanade. Several others spans take the bridge on to the point where it is run into the level of the existing arches. The bridge is to be constructed for a double line of rails throughout.

The foundations in the river bed will be formed of two wrought-iron cylinders placed at a distance of 28 ft. apart from centre to centre, and filled with concrete. These cylinders rise to the height of within 2 ft. of low-water mark, where brick will be used, filled in also with concrete. The brick-work is to the height of 8 ft. above high-water mark, at which level the cylinders are connected and made to form a solid foundation, topped with a course of ashlar. Rising from this foundation two piers are formed of wrought iron pillars braced together and incased with iron plates of from ¾ to 1 in. in thickness. The piers thus constructed are connected with each other near the top, and the whole has the appearance of a high and strongly built arch on which to place the girders. The principal piers are octagonal in shape, with a diameter varying from 11 ft. to 14 ft. 6 in. The spans are each composed of four girders, with the exception of the higher spans. These are of two girders connected together, top and bottom, with bracing and flooring. The bridge throughout its whole length will have a parapet of between 5 ft. and 6 ft. in height, forming a wind guard. The depth of each girder on the piers is 16 ft. 6 in. The middle girders are 28 ft. 9 in. in the centre and at the ends 20 ft. 3 in. They are of hog-back lattice form. The other girders are of plain lattice work, and are all connected by cross-bracing, on the top of which the train travels, as it did on the old bridge. At the high girders the train travels between them. The platform of the bridge is of wrought iron throughout. In the construction of the new bridge, the old one will be sufficiently near for anchorage and cranes.

#### The History of Two Cents.

Several days ago an article appeared in the Telegraph in reference to the exactness of the Pennsylvania Railroad Company in making out the pay-rolls, and an instance was cited where an employé was killed after he had earned just 20 cents, which sum, however, was never called for and never had been cashed, though the check was ready in payment. There are three checks now in the Paymaster's office at the Union Depot which are still more striking evidences of the case in point. One of these checks is drawn for 7 cents and two of them are for 2 cents—one of the latter dated February, 1880, and the other March 31, 1881, which reads as follows: "No. 3,381. Accounting Department P. R. R. Co., Phila., Merch 31, 1881. Merchant's and Manufacturers National Bank, Pgh., Pa., for account of the Pa. Railroad Company Pay to Adam Stoneker, or bearer, the order of Robert Pittcain the sum of 0.2 (two) cents. M. Ross, for Auditor of Disbursements." The two-cent internal revenue stamp is attached to the check. In reply to inquiries, an officer of the Paymaster's office explains that this exactness is required for mutual protection. In the case cited the employé worked only 12 minutes and then decamped and has never since put in his claim. If hereafter he appears and claims his check, his time was taken by the proper officer, who is ready to be qualified to the correctness of time taken, and thus any effort of the missing man to claim more than his dues would be utterly futile.—Pittsburgh Telegraph.

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### Pittsburgh, Wheeling & Kentucky.

This company owns a line from Wheeling Junction, W. Va., to Wheeling, 24 miles. An extension from Wheeling to Benwood is in progress. The road is leased to the Pittsburgh, Cincinnati & St. Louis Company, and the equipment is furnished by that company. The report is for the year ending Dec. 31, 1890.

The general account is as follows:

Stock.....	\$399,000.00
Bonds.....	200,000.00
Accounts and balances.....	31,095.18
Balance of income.....	15,326.22
<b>Total.....</b>	<b>\$645,421.40</b>
Roads, etc.....	\$619,759.82
Accounts and balances.....	26,261.58
<b>Total.....</b>	<b>\$646,021.40</b>

The bonds are all of one issue, first-mortgage registered bonds, bearing 7 per cent. interest.

The traffic for the year was as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Train miles.....	88,288	70,461	I. 17,827	25.3
Pass. car miles.....	107,456	115,099	I. 7,643	6.6
Freight car miles.....	400,377	427,778	D. 27,401	6.4
Passengers carried.....	93,502	93,123	I. 379	0.4
Passenger miles.....	1,550,548	1,033,530	I. 517,018	50.0
Tons freight carried.....	107,095	121,808	D. 14,713	11.6
Ton miles.....	2,345,315	2,650,644	D. 305,329	11.5
Av. receipt:				
Per pass. per mile.....	2.62 cts.	2.63 cts.	D. 0.01 ct.	0.4
Per pass. per mile, net.....	0.69 "	0.67 "	I. 0.02 "	3.0
Per ton per mile.....	2.03 "	1.77 "	I. 0.26 "	14.7
Per ton per mile, net.....	0.84 "	0.87 "	D. 0.03 "	3.5

The earnings per train mile in 1890 were 130.34 cents gross and 47.87 cents net. Freight traffic was decreased by the stoppage for several months of the Wheeling iron mills.

The earnings for the year were as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Freight.....	\$47,504.46	\$46,810.34	I. \$694.12	1.5
Passengers.....	40,550.38	27,148.81	I. \$13,401.57	49.6
Mail, etc.....	3,480.01	3,639.47	D. 159.46	4.2
<b>Total.....</b>	<b>\$91,534.85</b>	<b>\$77,598.62</b>	<b>I. \$13,936.23</b>	<b>18.0</b>
Expenses.....	58,113.06	44,250.05	I. 13,863.01	31.3
<b>Net earnings.....</b>	<b>\$33,421.79</b>	<b>\$33,348.57</b>	<b>I. \$73.22</b>	<b>0.2</b>
Hire of equipment.....	8,063.14	7,008.62	I. 1,054.52	15.1
<b>Balance.....</b>	<b>\$25,358.65</b>	<b>\$26,339.95</b>	<b>D. \$981.30</b>	<b>3.7</b>
Gross earn. per mile.....	3.814 cts.	3.233 cts.	I. 0.581 cts.	18.0
Net ".....	1.392 cts.	1.389 cts.	I. 0.003 cts.	0.3
Per cent. of exps.....	63.48	57.02	I. 6.46	11.1

Expenses were increased by the large increase in passenger service and some additions to property.

The account with the lessee was as follows:

Due lessee Dec. 31, 1879.....	\$24,350.52
Received from lessee in 1880.....	19,565.20
<b>Total.....</b>	<b>\$4,785.32</b>
Net earnings for 1880.....	\$25,358.65
Sundry items.....	195.72
<b>Total.....</b>	<b>\$25,554.37</b>

Due lessee Dec. 31, 1880..... \$18,361.95

The Treasurer of the company reports receipts of \$18,393.98 and payments of \$18,145.58, leaving a balance of \$248.40. Of the payments \$14,000 were for interest, \$2,177.64 sinking fund, the rest chiefly for Benwood Extension.

Expenses for the year were increased by damage from storms. The extension to Benwood awaits the decision of the courts in relation to the crossing of the Baltimore & Ohio property in Wheeling.

### Great Western, of Canada.

This company's report for the half year ending July 31, 1891, covers the system of 527 miles worked, consisting of the main line from Suspension Bridge to Windsor, 229 miles; the Loop Line, from Ft. Erie to Glencoe, 145.5 miles; 137.5 miles of branches owned and 15 miles of branch leased.

There are also 296 miles of leased branches, whose operations are not included, only the result from them being reported.

Comparisons are made with the corresponding half of 1890 in all the following statements.

Net charges to capital account during the half-year were \$32,769. There was issued \$19,000 in 5 per cent. debenture stock, and \$4,600 of 6 per cent. matured.

The directors ask authority to borrow \$350,000, of which the sum of \$150,000 is to be advanced to the Detroit, Grand Haven and Milwaukee Company, the remaining \$200,000 being required for general purposes, chiefly for additions to the equipment.

The income account for the half-year was as follows:

	1891.	1890.	Inc. or Dec.	P. c.
Gross earnings.....	\$470,725	\$437,433	I. \$33,292	7.6
Expenses.....	330,000	301,228	I. 28,772	9.6
<b>Net earnings.....</b>	<b>\$140,725</b>	<b>\$136,205</b>	<b>I. \$4,520</b>	<b>3.3</b>
Interest, loss on leased lines, etc.....	100,154	103,145	D. 2,991	2.9
<b>Balance.....</b>	<b>\$40,571</b>	<b>\$33,060</b>	<b>I. \$7,511</b>	<b>22.7</b>
Dt., Gd. Haven & Mil. div.....	12,329	9,216	I. 3,113	33.5
Balance from last hf.-yr.....	4,674	1,787	I. 2,887	161.5
<b>Surplus.....</b>	<b>\$23,568</b>	<b>\$24,043</b>	<b>D. \$475</b>	<b>2.0</b>

Expenses include the usual credits to the various reserve funds.

The directors recommend the declaration of the half-year's dividend on the 5 per cent. preference stock, and of a dividend at the rate of 1 1/4 per cent. per annum on the ordinary stock. This will leave a balance of \$6,833 to the current half-year.

All the items of traffic showed an increase, and expenses also increased. The usual comparison of earnings and expenses per train mile for six corresponding half years is as follows:

Half years ended	Earnings per train mile.	Working expenses, excluding transfers to reserve funds.	Per cent. of gross receipts.
July 31, 1876.....	4 10 1/4	3 6 1/4	73.63
" 1877.....	4 9 1/4	3 6 1/4	74.41
" 1878.....	4 2	3 2	76.05
" 1879.....	4 1 1/4	3 1 1/4	75.92
" 1880.....	4 1 1/4	3 5 1/4	89.78
" 1891.....	4 11	3 6 1/4	71.93

The balance of the reserve funds has been somewhat reduced, owing chiefly to the renewal in stone and iron of some of the largest wooden bridges. The balance of the several funds on July 31 was as follows: Ferry-steamers,

\$230,844; locomotive, \$118,503; car-renewal, \$19,608; rail and bridge renewal, \$11,733; insurance fund, \$2,055; total credits, \$177,748, from which is to be deducted a debit balance of \$39,822 to leased lines account, leaving a net credit to renewal funds of \$137,926.

The report says: "The gross receipts of the leased lines exceeded the working expenses by a sum of \$5,583, which has gone in reduction of rent charges, bond interest, etc., leaving a net debit balance of \$15,629. The sum of \$4,129, being the equivalent of 20 per cent. of the half-year's earnings on additional traffic interchanged with the Wellington, Grey & Bruce Railway, will, under traffic agreements, be applied to the acquisition, on Jan. 1, 1882, of the bonds of that company."

"The directors report with much regret that the measures adopted by the representatives of the American trunk lines, with the object of obviating undue competition and maintaining through rates on a permanent and satisfactory basis, have not proved so successful as was anticipated. On June 7 last, Mr. Albert Fink, the Trunk Line Commissioner, in consequence of representations from one of the roads interested that through tariff rates were not being maintained, officially announced an alteration in the east-bound tariff, the rate for grain being reduced from 30 to 25 cents per 100 lbs. from Chicago to New York. This revised tariff not having been adhered to by all the trunk lines, a still further reduction was ordered, by notice dated June 14, to 20 cents for grain, at which it nominally remains, but it is notorious that even this low rate is not being observed. This action injuriously affected the through freight earnings during the last two months of the half-year, at the same time increasing the percentage of working expenses. The directors can only hope that wiser counsels will soon prevail, and in the meantime all their influence will, as heretofore, be exercised to promote peace and harmony between the competing systems."

"The branch railway between Butler and Detroit, referred to in the last half-year's report, not having been open throughout for traffic prior to July 31, little advantage is shown from this connection in the present accounts. The line has since been taken over by the Wabash Company, and is expected to be in full operation before the close of navigation. The directors have to report the conclusion of agreements between the Lake Shore & Michigan Southern, the Canada Southern, and this company for a division of traffic to and from the Southwest in connection with the Wabash, St. Louis & Pacific Railway."

### Atlantic, Mississippi & Ohio.

The final report of C. E. Perkins and Henry Fink, Receivers of this road, to the United Circuit Court, covers a period of ten months from July 1, 1880, the close of the preceding report, to April 30, 1881, when the road was delivered to the Norfolk & Western Company, purchaser at foreclosure sale. From July 1, 1880, to Feb. 10, 1881, the road was worked by them under order of the Court; from Feb. 10 to April 30, 1881, for account of the purchasers.

The road extends from Norfolk, Va., to Bristol, 408 miles, with the City Point Branch, 10 miles, and the Salt Works Branch, 10 miles, making 428 miles in all.

The equipment consists of 82 engines, of which 10 are in passenger service, 64 on freight, 9 on service trains and 9 are switching engines; 24 passenger, 2 sleeping, 8 baggage and 7 postal, mail and express cars; 507 box, 185 stock, 906 flat and 43 caboose cars; 1 pay-car, 1 pile-driver and 65 ditching cars; a total of 41 passenger train cars, 1,041 freight cars and 67 service cars.

The train and car mileage for the ten months was as follows:

	Norfolk & Petersburg & South Side Divs.	Va. & Tenn. Div.
Miles run by locomotives.....	594,737	790,476
Gross tons hauled one mile.....	158,245.694	188,002.422
Net tons hauled one mile.....	53,461.120	41,807.841
Miles run by passenger cars.....	505,018	885,285
" " freight cars.....	7,034.182	7,252.682
" " service cars.....	546.127	265.108
Cost of loco. service per mile.....	14.79 cts.	18.51 cts.
Cost of car repairs per mile.....	0.32 "	0.26 "

Cars of the Norfolk & Petersburg and South Side Division ran 2,011,829 miles, and cars of the Virginia & Tennessee Division 2,150,599 miles over foreign roads.

The traffic for the ten months was as follows:

	1880-81.	1879-80.	Increase.	P. c.
Passengers carried.....	130,221	120,114	10,107	8.4
Passenger miles.....	8,890,587	7,799,782	1,090,805	14.5
Tons freight carried.....	439,918	309,781	130,137	42.0
Ton miles.....	99,880,059	84,844,075	15,035,984	17.7

Average rate:

Per passenger per mile.....	3.27 cts.
Per ton per mile.....	1.45 "

Of the passenger miles 25.3 per cent., and of the ton miles 63.8 per cent. were of through business in 1880-81. Of the passenger miles 19 per cent. were of second-class passengers.

The earnings for the ten months were as follows:

	1880-81.	1879-80.	In. or Dec.	P. c.
Passenger trains.....	\$388,378.70			
Tonnage trains.....	1,448,041.32			
Miscellaneous.....	12,711.90			
<b>Total.....</b>	<b>\$1,849,131.92</b>	<b>\$1,671,471.17</b>	<b>I. \$177,660.75</b>	<b>10.6</b>
Expenses.....	1,029,482.25	836,484.91	I. 192,997.34	23.1
<b>Net earnings.....</b>	<b>\$819,649.67</b>	<b>\$834,986.26</b>	<b>D. \$15,336.59</b>	<b>1.8</b>
Gross earn. per mile.....	4,320.40	3,905.31	I. 415.09	10.1
Net earn. per mile.....	1,915.07	1,950.90	D. 35.83	1.8
Per cent. of exps.....	55.07	50.04	I. 5.03	10.0

Renewals last year were large. Besides renewals the sum of \$72,571.97 was spent for new construction.

On July 1, 1880, the cash on hand was \$659,089.46. Actual receipts (without reference to the period when earned) for the ten months were \$1,848,524.53; total, \$2,506,613.99; disbursements, \$2,146,253.08, leaving a balance of \$360,360.91.

From the date of sale to April 30 a separate account was kept. The net balance accruing to the purchasers was \$245,009.44, to which is added Receivers' liabilities transferred, making a total of \$295,242.53; assets amounting to \$281,411.37 have been transferred to purchasers, leaving a balance of \$13,830.96 due them.

The Receivers' account is carried up to Sept. 30, 1881; for the entire period of the receivership from June 13, 1876, to Sept. 30, 1881, their statement is as follows:

Total receipts.....	\$9,729,682.63
Total expenditures.....	9,576,970.64
<b>Balance Sept. 30, 1881.....</b>	<b>\$212,711.99</b>

The total resources of the Receivers on Sept. 30 were \$251,450.92; liabilities, \$52,569.89, leaving a balance of \$198,881.03 subject to order of Court.

Since July 1, 1880, the Receivers have paid interest on bonds to the amount of \$621,041.11. They have also, by canceling bonds held by them as assets and by cash payments, reduced the divisional bonded debt by the sum of \$345,374.73.

The total amount charged for new construction has been

\$220,191.23. The sum of \$30,000 was paid for the Norfolk toll bridge, which has been removed in order to allow vessels to come up to the company's freight station. A new freight house and wharf have been built in Norfolk.

Work done during the receivership included 2,896 ft. of new wooden bridges, 2,002 ft. new composite bridges and 4,089 ft. new iron bridges built; 16,705 perches of new bridge masonry; 8.3 miles of new sidings; 188,916 cubic yards of ballast; 842,985 new ties, and 21,613 tons of new steel rails, equal to about 248 miles of track. The road and equipment have been very much improved, and were turned over to the new company in satisfactory condition.

### Cincinnati & Muskingum Valley.

This company owns a line from Dresden, O., to Morrow, 148.4 miles. Its road is leased to the Pittsburgh, Cincinnati & St. Louis Company. The report presented is for the year 1880.

The equipment consists of 12 engines; 9 passenger, 1 combination and 4 baggage cars; 53 box, 39 stock, 12 flat, 223 gondola, 29 hopper and 4 caboose cars; 1 tool car.

The general account was as follows:

Stock.....	\$3,907,320.00
Bonds.....	1,500,000.00
Due lessee.....	608,449.80
Sundry accounts, January coupons.....	52,764.39
<b>Total.....</b>	<b>\$6,158,534.19</b>
Road and equipment.....	\$5,540,164.38
Supplies transferred to trustee.....	13,600.00
Accounts.....	30,658.67
Cash.....	26,320.00
Balance of income.....	547,701.14
<b>Total.....</b>	<b>6,158,534.19</b>

The bonds are all first-mortgage bonds, bearing 7 per cent. interest.

The traffic for the year was as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Train miles.....	393,185	416,527	D. 23,342	5.6
Pass. car miles.....	599,601	543,591	I. 56,010	10.3
Freight car miles.....	2,364,794	3,067,105	D. 702,311	22.8
Passengers carried.....	210,793	189,636	I. 21,157	11.2
Passenger miles.....	4,356,261	4,067,077	I. 289,184	7.1
Tons freight carried.....	259,057	285,784	D. 26,727	9.1
Ton miles.....	13,816,861	17,926,938	D. 4,110,077	22.4
Av. train load:				
Passengers, No.....	20.54	19.23	I. 1.31	7.4
Freight, tons.....	101.02	111.33	D. 10.31	9.3
Av. receipts:				
Per pass. per mile.....	2.63 cts.	2.50 cts.	I. 0.13 cts.	5.0
Per pass. per mile, net.....	0.80 "	0.72 "	I. 0.08 "	11.0
Per ton per mile.....	1.64 "	1.40 "	I. 0.24 "	17.1
Per ton per mile, net.....	0.41 "	0.38 "	I. 0.03 "	7.9

Of the freight car mileage 28.06 per cent. in 1880 was of empty cars.

The earnings for the year were as follows:

	1880.	1879.	Inc. or Dec.	P. c.
Freight.....	\$226,239.14	\$250,966.54	D. \$24,727.40	9.8
Passengers.....	114,546.40	105,203.47	I. 9,342.93	8.9
Mail, etc.....	23,858.00	18,496.11	I. 5,361.89	29.0
<b>Total.....</b>	<b>\$364,703.54</b>	<b>\$374,666.12</b>	<b>D. \$9,962.58</b>	<b>2.7</b>
Expenses.....	319,881.67	264,323.95	I. 55,557.72	20.9
<b>Net earnings.....</b>	<b>\$44,821.87</b>	<b>\$110,342.17</b>	<b>D. \$65,520.30</b>	<b>50.4</b>
Gross earn. per mile.....	2,457.59	2,524.70	D. 67.11	2.7
Net ".....	302.03	742.19	D. 440.16	50.4
Per cent. of exps.....	87.71	70.60	I. 17.11	24.3

The earnings per train mile were 104.53 cents gross and 12.84 cents net, against 90.67 and 26.85 cents in 1879.

The result of the year was as follows:

Net earnings.....	\$44,821.87
Interest paid.....	105,000.00
<b>Deficit advanced by lessee.....</b>	<b>\$60,178.13</b>
Previous advances for interest.....	\$539,005.62
" " betterments.....	9,296.05
<b>Total advances by lessee.....</b>	<b>\$608,449.80</b>

The loss of \$60,178.13 compares with a net surplus of \$5,142.17 in 1879.

During the year 10.32 tons steel rails, 917.2 tons iron rails and 27,279 new ties were laid. There were 10.5 miles of road ballasted and 11.8 miles of fence built.

The





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S. WRIGHT DUNNING AND M. N. FORNEY.

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN OPINIONS, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## THE NATIONAL GOVERNMENT AND THE RAILROADS.

The present Chief of the Bureau of Statistics, Mr. Joseph Nimmo, Jr., has completed a report on the internal commerce of the United States, now just published. This includes several discussions on railroad questions, which are issued separately in a small pamphlet entitled "Cost of Transportation, Railroad Confederations or Pooling Arrangements, and the Governmental Regulation of Railroads." We are now approaching the time when the state legislatures and the national Congress meet, and when there are sure to be many proposals to legislate for the regulation of railroads; and any utterances, official or other, which discuss the question fairly and on the basis of the ascertained facts in the case, deserve consideration, and are more likely to receive it than at other times. Mr. Nimmo's reports are prepared with exceptional intelligence, and show that he has studied the subject thoughtfully and with knowledge of its complexity and difficulty.

A very large part of the report is devoted to a sketch of the actual situation, which we may presume to be sufficiently familiar to our readers, but which it is of great importance to present to the general public (which for the most part means the editors of daily newspapers, through whom the general public receives nearly all its information on such subjects) in a compact, easily read and easily understood form, which can be preserved for reference.

Something of this kind used to be done by Mr. Charles Francis Adams, Jr., when he was Chairman of the Massachusetts Railroad Commission, in comments on the general situation of railroad business in its relations to the public, very attractively presented, and with much insight. We find that nearly all discussions of American railroad questions in this country and Europe have been profoundly affected by these annual reviews by Mr. Adams, which to a very large number of journalists have evidently been their chief source of information as to the facts of current railroad history. This last publication by Mr. Nimmo covers something of the same ground.

The first paper in the report treats of "Reductions in the Cost of Railroad Transportation." It illustrates this by a comparison of the average cost per ton per mile in 1873 and 1880 on 13 leading railroads, which it gives as 1.77 cents in 1873 and 1.07 in 1880. We suspect that these figures were obtained by averaging the averages of the several roads, which does not give the average rate of the whole number. By our calculation the average rate of the 13 roads, found by dividing their aggregate freight earnings by their aggregate tonnage-mileage in the two years, was 1.63 cent per ton per mile in 1873 and 0.98 cent in 1880.

The actual reduction in the rates is almost exactly 40 per cent. The roads with the lowest rates have the largest traffic, and this causes the average rate

of all the roads to be less than the average of their average rates.

In this period of a great reduction of rates the report says the freight traffic increased 71½ per cent. The figures which it gives, however, are of tons shipped, which are not a measure of traffic. The actual increase in freight traffic was much greater, as shown by the aggregate number of ton-miles, which increased from 7,166 millions in 1873 to 13,995 in 1880, or 95 per cent. The difference between the percentage of increase and that of tons hauled is due of course to the larger average haul, which was 157 miles in 1873 and 179 in 1880. Recent consolidations will be likely to reduce the number of tons reported, as what was counted in a through shipment as one ton on each of two or three or more roads, when these roads are united is counted but once. It is important that this should be borne in mind. In many cases tremendous errors would result from measuring traffic in different years by the number of tons reported hauled.

While the traffic thus increased 95 per cent., the earnings from it increased by only 29 per cent. At the rates of 1873 the traffic of 1880 would have yielded not \$143,388,000, which was their actual freight earnings in 1880, but about \$236,400,000, or \$93,000,000 more. The tremendous effect of these reductions of rates is here seen at a glance, and may be the better appreciated by the fact that the total amount paid in dividends by all the railroads in the United States in the last year reported was but \$77,000,000.

Mr. Nimmo compares this reduction in the charges for transportation with the charges on the New York canals and the prices of 22 articles of merchandise. The average prices of the merchandise fell 12½ per cent. from 1870 to 1880, the canal rates 32½, the rail rates 39½ per cent. The immense increase in the exports of the country since 1871 he attributes largely to the lower charges for transportation, the exports being chiefly Western products, carried long distances. He might have added that the reduction of rates on this produce carried from the West to the seaboard has been very much greater than the average reduction.

The discussion of the reduction of rates is followed by some remarks on the methods by which freight rates are determined. In connection with this the report says:

"The current history of railroad transportation in this country clearly indicates that there are evils connected with it which call for a public remedy; evils which affect not only the commercial and industrial interests of the country, but which also affect the railroads. Hence arises the demand for some sort of government intervention, either through the enforcement of specific provisions of law, or through the moral influence exerted by a well-grounded apprehension of such intervention, as a result of the scrutiny exercised by intelligent and faithful boards of railroad commissioners."

A considerable portion of the report is occupied by a sketch of organization and the methods of the co-operative associations of railroad companies for "pooling" freight. It concludes that so long as they have no legal sanction and their determinations cannot be enforced by law, they will always be in danger of disruption and failure, which may be caused by a simple change of opinion of the chief executive of one of the companies. At present such organizations are tentative, and their effects on the public interests are not sufficiently shown to justify legalizing them at once.

The report points out some great difficulties in the way of making the government a party in enforcing such regulations as are made by the co-operative railroad organizations, such as the differences of rates to different markets—difficulties, we will add, which will exist just the same under any scheme of government regulation, and little felt so far because, in the first place, most attempts to fix rates by law, so far, have failed almost wholly; and, second, because where a single state makes rates, it has little power to make discriminations, because of the limitation of its field. No state has yet pretended to say what shall be the difference in the rates from points in it to New York, Philadelphia and Baltimore, or to any other great rival markets.

The questions as they present themselves now are formulated in the report:

"First. Are there evils connected with the railroad system of the United States which injuriously affect the public interests, and are those evils of such magnitude as to demand governmental interference?"

"Second. By what means can such interference be exercised without subjecting the government to a degree of responsibility and to difficulties of an administrative nature which would more than counterbalance the possible good results which might be expected to follow governmental interference for the purpose of correcting the evils referred to?"

A thorough investigation by experts is urged as preliminary to any attempt at governmental regulation, and this suggestion we indorse without reservation. A national investigation, made by trained economists and statisticians and experts in transportation business, and men thoroughly familiar with the

national commerce and industries might do most valuable work, very probably suggest useful legislation, and almost certainly prevent much mischievous legislation, state as well as national.

## ACCIDENTS TO RAILROAD EMPLOYEES.

Last week an announcement was published in our columns that the Railroad Commissioners of Connecticut would "give a public hearing, upon the subject of car coupling," at No. 41, State Capital, in Hartford, on Tuesday, Nov. 29, at 10 o'clock. Precisely what the nature of that "hearing" will be is not yet apparent. If it consists in listening to inventors of car-couplers on the advantages of their respective devices, then the Commissioners of Connecticut may well be considered objects of sympathy, if the hearing is at all prolonged. That there is great need, of not only a hearing, but of a thorough investigation of the subject, is only too apparent to any one who has given attention to such information relating to it as is accessible.

That the number of employees killed and injured on our railroads is enormously large, no one who has ever given attention to the subject can doubt. There are, unfortunately, no trustworthy data or statistics from which the aggregate mortality and injury due to accidents of this kind can be correctly known. There are, though, some records in existence from which some very rough estimates can be made, and which indicate such great sacrifice of life and so much human suffering that we have hoped that putting the figures in some intelligible form might attract the attention of railroad managers and the public generally to the subject, and thus lead to the adoption of some measures to diminish the number of accidents to this class of men, and ameliorate their lot, which, it may truly be said, is a hard one.

The states of Maine, Massachusetts, Connecticut, New York, Pennsylvania, Virginia, Ohio, Michigan, Illinois and Wisconsin require the railroad companies within their borders to report all injuries to employees to a state officer, who has different titles in the different states. These officers publish an annual report, in which details of these accidents are given more or less fully. The following summary (Table I.) of accidents

TABLE I.  
Giving Number of Railroad Employés Killed and Injured in Ten States in 1879 and 1880.

STATE.	Number of employés killed.	Number of employés injured.
1879.		
Maine.....	.....	14
Massachusetts.....	28	55
Connecticut.....	14	35
New York.....	145	520
Pennsylvania.....	174	885
Virginia.....	19	17
Ohio.....	61	218
Michigan.....	31	119
Illinois.....	72	246
Wisconsin.....	18	110
Total.....	562	2,200
1880.		
Connecticut.....	126	431
Ohio.....	86	241
Michigan.....	28	122
New York.....	127	514
Massachusetts.....	49	108
Total.....	416	1,416

to employees gives the total number killed and injured in the ten states named during the year 1879, and also the number in 1880 in five states, which are the only ones from which the reports for the latter year have thus far been published.

Of the correctness, or rather incorrectness, of these reports, no less an authority than the Railroad Commissioners of Massachusetts, in 1880, said:

"These reports, we have good reason to believe, are very imperfect, so far as they relate to accidents not fatal, whether happening to trains or to individual employes. Some companies faithfully report the slightest mischance; others apparently reserve their reports for serious or fatal disasters."

In the Ohio Commissioner's report for 1880 it is said:

"There are some companies who are very loath to report train accidents. They will omit everything of that nature which they can construe as not of sufficient importance to justify a report. Other companies report all their accidents, great and small. An injustice is, therefore, done this last class of companies in placing them side by side with those of the other class in the classified table of train accidents. Thus the Lake Shore & Michigan Southern Railway Company reports but one train accident during the year. The lessee of the Pittsburgh, Ft. Wayne & Chicago Railway reports 52 train accidents during the same period on that road. Yet there is no road better equipped and more carefully managed within the state than the road last named."

The reports published are undoubtedly very inaccurate, but the errors are almost entirely if not quite those of omission, as no railroad company is at all likely to report an accident or injury to an employé which has not occurred. The evidence that such omissions exist will be considered further on.

For the purpose of this article, though, absolute ac-



curacy is not essential, as all that will be aimed at is, not to estimate with precision the number of employes who are killed and injured, but to show that a great many are, and that a terrible amount of sorrow and pain is produced by accidents which probably cannot be entirely prevented, but which may be lessened to a much greater extent than is ordinarily believed.

It would not be correct to assume that the number of railroad employes killed and injured is in proportion to population, and yet, undoubtedly, there is some relation between the two, because railroads follow population very rapidly, and, in fact, often go in advance of it, and traffic also bears some relation to the number of people who are tributary to the roads which carry it. It happens that the population of the ten states named in Table I. was, by the census of 1880, somewhat less than one-half of all the 38 states in the Union, omitting the territories. As shown by the table, there were 562 railroad employes reported killed and 2,209 injured in the ten states named, and therefore, if the accidents were in proportion to population, the total number for the whole country would have been, for that year, 1,124 killed and 4,418 injured.

While we cannot trust implicitly to this calculation, it may be safely assumed that the number of employes killed was very much greater than 562 and the injured than 2,209, and that probably the number of each was very nearly double those figures, and possibly may have been more than double. The evidence in support of the latter hypothesis will be presented further on.

The reports of the five states of Massachusetts, Connecticut, New York, Ohio and Michigan, for 1880, the only ones thus far received for that year, show that 416 employes were killed and 1,416 were injured in these five states during that time. The population of these states is somewhat less than one-quarter of that of the Union, and therefore the accidents for 1880, if esti-

the country 416 railroad employes were killed and 1,416 injured, and that, probably somewhere about four times as many were killed and injured in the whole country.

There is, though, another way of estimating the number of employes killed and injured in the whole country. The reports made by the different roads to the state authorities give the number of locomotives and also the number of employes killed and injured on those lines.

This makes it possible to calculate the number of locomotives to each person killed and each one injured on the different roads during the year, and also get a similar average for a number of roads. These figures, for the years 1879 and 1880, and for 14 different roads, are given in Table II. In it the second column gives the number of engines owned by each company, the third the whole number of employes killed in each of the two years, and the fourth column the average number of locomotives to each person killed, which is obtained by dividing the number of locomotives owned by the number killed. The sixth and seventh columns give the number injured and the number of locomotives to each person injured on the different lines, and at the foot the aver-

gestive. The significant fact appears in the table that roads which have the reputation of keeping very complete and accurate accounts, such as the Illinois Central, the New York, Lake Erie & Western, the Pennsylvania, the Philadelphia & Erie, the Pittsburgh, Cincinnati & St. Louis and the United Railroads of New Jersey, all have a high injury rate.

In 1879 these rates on the roads named were respectively 2.82, 1.93, 1.98, 1.02, 0.79 and 2.14, or an average of 1.78. The roads which have not that reputation, such as the Boston & Albany, the Chicago & Northwestern and the New York Central, all have low rates. These are 7.84, 9.8 and 7.62 respectively, or an average of 8.21 in 1879. In 1880 the rate of injury on the first group of roads was one person for 1.73 engines, and on the second it was one for 6.26 engines.

That the rate of injuries for the first group of roads is not correct for 1879 is shown by calculating the number of injured for that year by that rate. According to Poor's Manual, there were 17,084 locomotives in the whole country that year. At the rate referred to, 8.21 locomotives to each person injured; we would have for the whole country 2,081 injured. But in Table I. we have reports of 2,209 persons actually injured in ten states, or a larger number

TABLE III.

Showing the probable number of railroad employes killed and injured in the whole of the United States in 1879 and 1880, calculated from different data.

METHOD AND DATE OF CALCULATION.	1879.				1880.			
	Killed.		Injured.		Killed.		Injured.	
	Number of locomotives to each person killed.	Number of persons killed.	Number of locomotives to each person injured.	Number of persons injured.	Number of locomotives to each person killed.	Number of persons killed.	Number of locomotives to each person injured.	Number of persons injured.
In proportion to population and from data furnished by the reports of railroad commissioners and similar officers in different states.....	A	B	C	D	E	F	G	H
		1,124		4,418		1,664		5,664
In proportion to the number of locomotives, from the number of locomotives to each person killed and injured on the Boston & Albany, New York Central and Northwestern roads.....	16.4	1,041	8.21	2,081	14.6	1,229	6.26	2,867
In proportion to the average number of locomotives to each person killed and injured taken from table II.....	14.4	1,186	2.6	6,570	14.4	1,246	2.67	6,722
In proportion to the number of locomotives to each person killed and injured on roads having the greatest relative number of accidents to employes.....	13.6	1,256	1.78	9,597	13.2	1,359	1.73	10,375

TABLE II.  
Showing the Number of Employes Killed and Injured on Different Railroads in 1879 and 1880.

NAME OF RAILROAD.	Number of locomotives owned by company.....	Total number of employes killed.....	Average number of engines to each employe killed.....	Total number of employes injured.....	Average number of engines to each employe injured.....	Dead blocks.....
1879.						
Boston & Albany.....	243	13	18.7	31	7.84	Single
Chicago & Alton.....	165	14	11.78	53	3.12	"
Chicago & Eastern Ill.....	28	4	4.66	6	4.66	"
Chicago & Northwestern.....	354	15	23.6	36	9.8	"
Illinois Central.....	158	10	15.8	56	2.82	Both.
Illinois Midland.....	12	1	12	5	2.4	"
Michigan Central.....	219	10	21.9	56	3.91	Single
New York Central.....	602	45	13.37	79	7.62	"
New York, Lake Erie & Western.....	504	47	10.72	261	1.93	Double
Pennsylvania.....	887	51	17.39	447	1.98	"
Philadelphia & Erie.....	123	9	13.67	120	1.02	"
Pittsburgh, Cin. & St. L.....	112	10	11.2	141	.79	"
St. Louis, Vandalia & T. H.....	32	1	32	10	3.2	Single
United Railroads of New Jersey.....	242	22	11	113	2.14	Double
Totals.....	3,681	255	14.4	1,383	2.6	
1880.						
Boston & Albany.....	248	19	13	40	6.2	Single
Chicago & Alton.....	196	15	13	49	4	"
Chicago & Eastern Ill.....	40	3	13.3	12	3.3	"
Chicago & Northwestern.....	373	30	12.4	74	2.1	Both.
Illinois Central.....	213	13	16.4	101	1.2	"
Illinois Midland.....	16	1	16	13	1.2	"
Michigan Central.....	219	8	27.4	140	1.5	Single
New York Central.....	639	37	17.2	87	7.3	"
New York, Lake Erie & Western.....	539	48	11.2	239	2.2	Double
Pennsylvania.....	118	9	13.1	150	.78	"
St. Louis, Vandalia & T. H.....	32	5	6.4	16	2	"
United Railroads of New Jersey.....	242	14	17.3	152	1.59	"
Totals.....	2,875	202	14.2	1,033	2.67	

mated according to population, from the data in the table, would be four times those reported, or 1,664 killed and 5,664 injured. It should be pointed out that in the states named 279 employes were killed and 937 injured in 1879, whereas in 1880 416 are reported killed and 1,416 injured, or an increase of very nearly 50 per cent. in each case during the latter year. This is no doubt due to some extent to greater traffic, but there was actually a great increase in the number of accidents in 1880, as our report of train accidents showed.

It is true that the railroad traffic is probably greater in proportion to population in the states of which we have reported than it is in the others, which of course is an element of error in our estimates; but on the other hand the highest authorities in the land have been quoted to show that the railroad companies do not report all their accidents, of which fact evidence will be given further on, and therefore there is an error of the opposite kind in what may be called the premises of the calculations. All that is now pointed out is, that among one-quarter of the population of

age for all the roads in the table is calculated. From this average rate and the total number of locomotives in the whole country a probable total number of accidents may be estimated.

That the latter bear exactly the same proportion to the number of locomotives in all parts of the country is of course not true, but an examination of the table shows a much greater uniformity in the rate than might be expected, and where any very great differences exist they are usually susceptible of explanation. It will be noticed that there is much more uniformity in the death rate, or the number of engines to each person killed, in the third column than there is in the injury rate in the column next to the last. In some cases, as that of the Chicago & Eastern Illinois and the St. Louis, Vandalia & Terre Haute, roads which have comparatively few engines, not enough to make an average, and of which the rates vary considerably from the other figures, it will be found that the mean of the two years, on those roads, is very nearly that of the other lines.

The reason, doubtless, for the death rate being more uniform than the injury rate is, that deaths are more completely reported than injuries, especially if the latter are not serious.

Leaving out of consideration the Chicago & Eastern Illinois and the St. Louis, Vandalia & Terre Haute roads, for the reason given, the road with the highest death rate in the two years is the New York, Lake Erie & Western, in 1869, which then killed an employe for each 10.72 engines. The lowest is the Michigan Central in 1880, which that year killed one employe to 27.4 engines. The highest injury rate is on the Pittsburgh, Cincinnati & St. Louis, which hurt one man for 0.98 of an engine, or more than one per engine. The lowest was on the Chicago & Northwestern, in 1879, which hurt one man for 9.8 engines. In other words, according to these figures, the Pittsburgh, Cincinnati & St. Louis injured ten times as many men proportionately as the Northwestern did. If these figures were correct they would be very significant, but the fact that in 1879 the death rate on the Northwestern road was 2.36 and in 1880 went up to 12.4, and that the injury rate went from 9.8 in the one year to 5.0 the next; or in other words, was nearly doubled, is sug-

than the calculation based on the rate of the three roads named gives for the whole country, thus showing indubitably that either the rate of injury on those roads in 1879 was very much less than on other lines, or else that the injuries to employes were not correctly reported by their officers. These facts also indicate that there is some ground for the charge that all railroad companies do not report accidents fully and correctly, which was made by the Railroad Commissions of Massachusetts and Ohio.

In Table III., the number of employes killed and injured in 1879 and 1880, as deduced from the state reports and the population, is given in the first horizontal line under the headings. In the second horizontal line the numbers of killed and injured, calculated by the average rates of the Boston & Albany, New York Central and Chicago & Northwestern roads are given. In the third line the numbers calculated from the average rates of the 14 roads given in Table II. are given, and the fourth line contains the numbers of killed and injured calculated from the average rates of the roads having the greatest relative number of such accidents:

It will be seen that in the number of employes killed there is a very close agreement in the results of each of the four methods of calculation, which indicates that these are reported very correctly; and it may safely be inferred, it is thought, from these figures, that from 1,200 to 1,500 railroad employes were killed in this country last year.

There is, though, no such close agreement in the figures giving the numbers of injured. For the reasons already pointed out, the data upon which the calculations in the second horizontal line are based are untrustworthy, and therefore the results obtained from them should be thrown out. The number injured in 1880, calculated by population, is 5,664, and by the average number of locomotives taken from 14 roads, it is 6,722. In both cases the rate of injury from which these two calculations were made was deduced from statistics which included those of the three roads which have been shown to be incomplete. On the other hand, the companies which have furnished the data from which the figures in the last line are calculated are noted for keeping their



accounts and statistics with the utmost fullness and care, and consequently the latter are much more worthy of being accepted as correct than those of most of the other lines in the country. The probability seems to be, then, that the data from which the figures in the last line were calculated are more worthy of credence than those used for the other calculations, and that the number of railroad employes injured in 1880 was nearer to the largest calculated number, 10,375, than to any of the others. To sum up, then, it is a tolerably safe inference from our figures that from 1,200 to 1,500 railroad employes are now killed in this country annually, and somewhere from 5,000 to 10,000, probably nearer the latter number than the former, are wounded—figures which suggest an appalling amount of sorrow, pain and suffering.

The cause and prevention of accidents of this kind will be the subject of another article.

#### NEW YORK RAILROADS IN 1879-80.

Thirteen months after the year whose statistics it gives has expired, has just appeared the report of the State Engineer and Surveyor on the Railroads of New York for the year ending with September, 1880. In the railroad world, and especially in these times, this is ancient history, but as it is the first and only collection of the statistics of the New York railroads for the year, it still has some interest and importance—not nearly so much, however, as if it had appeared directly after the State Engineer had finished it and made his report to the Legislature, which was, we believe, last March.

The year covered by the report was the one of greatest growth of prosperity for most railroads in this country that they have ever had, at least for the New York railroads. It was a year of heavy traffic, though the growth in freight traffic on the New York roads was not so great as it had been in several earlier years; but it was also a year when for the most part trunk-line through rates were well maintained—a fact of vast importance for New York railroads, as they include (or the report does) not only the New York Central and the Erie, but also the Lake Shore, the New York, Pennsylvania & Ohio, and the Boston & Albany. An enormous proportion of the traffic of these roads is through, or carried at through rates, and of the 7,963 millions of ton miles carried on the 82 New York roads, no less than 6,900 millions, or 87 per cent. of the whole, was carried on these five railroads. The year was one of large increase of passenger traffic, which before for a long time had been almost stationary. In it the increase of expenses, which has since become formidable, had but just begun.

The property concerning which the report is made was as follows in the two years ending Sept. 30, 1880:

Road and equipment:	1879-80.	1878-79.	Increase.	P. c.
Miles of road.....	8,743	8,494	249	2.9
Miles of track.....	13,583	13,165	418	3.2
Miles of road in N. Y.....	5,971	5,839	132	2.3
" " track ".....	9,305	8,873	432	4.9
No. locomotives.....	3,368	3,015	353	11.7
No. cars.....				
Passenger, 1st class.....	2,918	2,374	544	23.4
" 2d class.....	525	369	156	42.2
Baggage, mail and express.....	770	717	53	7.4
Freight.....	85,796	70,146	15,650	22.3

There is but a small increase in mileage, either of road or track, in or out of the state. The mileage in the state is about two-thirds of the total reporting. The other third is mostly made up of roads with heavy traffic, including besides those above mentioned, the New York, New Haven & Hartford.

The increase in equipment is considerable, and especially that in freight cars, no less than 15,650, or 22½ per cent., having been added to the stock in this single year.

The property above described is represented as follows:

Capital and cost:	1879-80.	1878-79.	Increase.	P. c.
Stock.....	\$510,034,598	\$437,514,237	\$72,520,361	16.1
Funded debt.....	361,270,475	351,088,450	10,182,025	2.9
Other debt.....	27,302,156	22,059,544	5,242,612	23.8
Stock and debts.....	\$905,507,219	\$810,659,232	\$94,847,987	11.7
Cost.....	729,564,161	675,269,208	54,294,953	8.0

With an increase of less than 3 per cent. in mileage, the increase in stock is very large indeed; of the whole increase of \$79,400,000, however, \$52,000,000 is added by the reorganization of the New York, Ontario & Western, \$10,000,000 by the reorganization of the New York, Pennsylvania & Ohio, \$7,000,000 by the organization of the Pittsburgh, Titusville & Buffalo and \$1,450,000 by the new West Side & Yonkers.

Of the total increase of \$10,000,000 in the funded debt, \$5,500,000 was a new issue of the Metropolitan Elevated, \$19,000,000 for funded coupons, etc., of the New York, Pennsylvania & Ohio, \$4,000,000 for the Pittsburgh, Titusville & Buffalo, \$900,000 for the Rome, Watertown & Ogdensburg, against which we have reductions of more than \$21,000,000, chiefly by the conversion of the bonds of bankrupt roads into stock,

\$16,000,000 being on account of the New York, Ontario & Western alone.

The result of these changes in capital is to make changes per mile of road as follows:

	1879-80.	1878-79.	Inc. or Dec.	P. c.
Stock.....	\$59,126	\$51,509	Inc. \$7,617	14.8
Funded debt.....	41,232	41,333	Dec. 101	0.2
Other debt.....	3,123	2,597	Inc. 526	20.2
Total.....	\$103,481	\$95,439	Inc. \$8,042	8.4
Cost.....	83,446	79,497	Inc. 3,949	5.0

There is thus a trifling decrease in the funded debt per mile, and large increases in the stock and unfunded debt.

The capital, however, represents a large amount of road yet to be completed, as in the case of the New York, Ontario & Western. From the figures, it would appear that there was during the year an increase of \$3,950 in the cost per mile and of \$8,040 in the stock and bonds.

The work done by the New York roads in these two years was:

	1879-80.	1878-79.	Increase.	P. c.
Train miles:.....	1879-80.	1878-79.		
Passenger.....	28,534,882	26,053,650	2,481,232	9.5
Freight.....	41,724,986	43,050,590	1,674,396	3.9
Total.....	73,259,868	69,104,240	4,155,628	6.0
Passengers carried.....	108,029,142	86,667,421	21,361,721	24.6
Passenger miles.....	1,213,472,106	1,044,468,114	169,003,992	16.2
Tons freight carried.....	57,356,128	47,350,174	10,005,954	21.1
Ton miles.....	7,963,161,555	7,134,743,043	828,418,512	11.6

It will be seen that with an increase of 9.5 per cent. in passenger train-miles there was an increase of 16.2 per cent. in passenger miles, due to an increase in the average passenger train load from 48 to 52.6; and with an increase of 3.9 per cent. in freight train-miles there was an increase of 11.6 per cent. in ton-miles, due to an increase in the average train load from 166 to 178 tons. For a whole state, the freight train loads are very large, but not the passenger train loads.

The elevated railroads in New York city do not report their passenger mileage, while they have more than one-fifth of the total passenger train mileage in the state. We have excluded these from the calculation for the average train load. If we leave out their train mileage also, we have an increase of nearly 6 per cent. in the train mileage, with an increase of 16.2 per cent. in the passenger mileage.

The growth of traffic in the state, in successive years, is shown below:

Year.	Miles of road.	Passenger miles.	Ton miles.
1872-73.....	8,200	1,127,973,832	4,419,181,946
1873-74.....	8,552	1,108,107,902	4,495,945,932
1874-75.....	7,426	1,032,809,456	4,348,077,786
1875-76.....	8,196	1,092,519,724	4,833,102,832
1876-77.....	8,131	1,029,378,134	5,004,643,104
1877-78.....	8,391	1,016,580,956	5,407,280,813
1878-79.....	8,494	1,044,468,114	7,134,743,043
1879-80.....	8,743	1,213,472,106	7,963,161,555

We said above that passenger traffic had shown little progress for several years. We see above that it had made none at all. In 1878-79 it was less than in 1873 or 1874. It is for this reason that the increase of 16.2 per cent. in passenger traffic in the last year reported is more remarkable than the increase of 11½ per cent. in freight traffic. We have been accustomed to increases in freight traffic; with one exception there has been an increase in every one of the eight years named above, and it has several times been more than 11½ per cent.—16 per cent. from 1877 to 1878, and no less than 23 per cent. from 1878 to 1879. From 1872-73 to 1879-80 the increase in ton miles has been no less than 3,544 millions, or 80 per cent., while the increase in passenger miles has been but 85½ millions, which is less than 8 per cent. Reckoning a passenger mile as equal to two ton miles, in 1872-73 just about one-third of the traffic of the New York railroads was passengers; last year less than 29½ per cent. of it was passengers, and from 1879 to 1880 there was an increase of 12½ per cent.

The increase of passenger traffic in the last year was nearly all on the six great roads, whose traffic, in millions of passenger miles, was as follows:

	1880.	1879.	Increase.	P. c.
New York Central.....	330.8	291.0	39.8	13.7
Erie.....	180.5	149.1	31.4	21.1
Lake Shore.....	173.2	135.5	37.7	28.0
New York & New Haven.....	125.3	103.1	22.2	18.0
Boston & Albany.....	113.2	101.2	12.0	12.0
N. Y., Penn. & Ohio.....	53.6	41.2	12.4	30.0
The six.....	976.6	821.1	155.5	19.0
All N. Y. roads.....	1,213.5	1,044.5	169.0	16.2

These six roads, which had last year more than 80 per cent. of the passenger traffic, had not quite half of the total mileage. They had an average of 230,000 passenger miles per mile of road, and all the other roads an average of only 52,600 per mile of road, and their aggregate increase in passenger traffic from 1879 to 1880 was less than 6 per cent. These roads, as we noted before, have most of the freight traffic of the state—6,979 millions of ton miles out of the total of 7,963 (87½ per cent.). But the freight traffic did not increase on them so fast in proportion as on the other roads (10½ against 18½ per cent.).

The earnings from this traffic were:

Earnings:	1879-80.	1878-79.	Increase.	P. c.
Passenger.....	\$30,424,576	\$26,267,467	\$4,157,109	15.8
Freight.....	73,440,105	59,683,455	13,756,650	23.1
Other.....	9,713,851	8,592,083	1,121,768	13.0
Total.....	\$113,578,532	\$94,542,005	\$19,036,527	20.1

In spite of the larger increase in passenger traffic, we find that freight earnings increase much more than passenger earnings, which is due to an increase in the average freight rates, which was probably almost wholly in the through freight rates, which in the last year were pretty well maintained, as they had not been for years before. From 1878 to 1879 there was an increase of but 3.4 per cent. in the gross earnings of these railroads, and there was a slight decrease in their freight earnings. It will be interesting to compare the following statement of the earnings for eight successive years with the one above of the traffic in those years:

Year.	Passenger.	Freight.	Other.	Total.
1872-73.....	\$26,581,694	\$70,604,323	\$7,220,706	\$104,406,723
1873-74.....	25,369,851	65,185,604	7,495,619	97,951,074
1874-75.....	24,743,856	56,828,279	7,550,286	89,122,421
1875-76.....	25,495,598	55,968,348	8,542,679	90,007,625
1876-77.....	24,212,472	53,038,660	7,860,656	85,120,788
1877-78.....	23,933,749	58,045,198	7,470,487	89,449,434
1878-79.....	26,267,467	59,683,455	8,592,083	94,542,005
1879-80.....	30,424,576	73,440,105	9,713,851	113,578,532

Passenger earnings reached their minimum in 1878, but they have increased 27 per cent. since then, and were larger in 1880 than ever before. They have fluctuated, it will be seen, much less than freight earnings, due to the fact that the amount of passenger traffic has changed little. The large increase in passenger earnings in 1879 and 1880 was largely due to the opening of the elevated railroads, which had insignificant earnings in previous years. If we subtract their earnings, we shall have as the passenger earnings of the New York railroads \$22,742,467 in 1879 and \$25,811,000 in 1880, which represents the progress made better than the figures in the table. By this, the passenger earnings were smaller in 1879 than in any other of the eight years, and those of 1880 were little more than those of 1876 and 1874, and less than in 1873.

There was a great decrease from 1873 to 1875 in freight earnings (nearly one-fifth), though freight traffic was nearly stationary; but from 1875 until after 1879 there was comparatively little change in freight earnings, though freight traffic in these four years increased from 4,350 to 7,135 millions of ton miles, or 64 per cent.—the roads carried nearly two-thirds more freight to earn about the same amount of money. It was only in 1879-80 that a great gain was made in freight earnings, the percentage of increase in freight earnings being twice as great as that in freight traffic—due, of course, to higher average rates. In fact, the average rate per ton per mile increased from 0.8082 to 0.9199 per cent.—nearly 15 per cent. Of the whole increase of freight earnings in the year no less than \$3,847,957 were due to this increase in the average rate, amounting to one-ninth of a cent per ton per mile, and equivalent only to an advance from 20¼ to 22¼ cents per 100 lbs. from New York to Buffalo. This leaves \$4,928,693 as the increase in freight earnings due to the increase in traffic. The increase in passenger earnings in the last year was nearly the same as that in passenger traffic.

The average rates in cents per ton and per passenger per mile and the average train loads have been:

	Rate per		Train-load.	
	Passenger	Ton mile.	Pass. No.	Fr. tons.
1872-73.....	2.3566	1.5997	57.82	97.97
1873-74.....	2.3894	1.4476	66.00	102.9
1874-75.....	2.4047	1.3039	52.29	122.42
1875-76.....	2.3337	1.1604	51.86	136.54
1876-77.....	2.3170	1.0590	51.16	135.95
1877-78.....	2.3543	0.9994	47.76	151.03
1878-79.....	2.1780	0.8082	48.00	165.72
1879-80.....	2.1302	0.9199	52.60	178.04

The State Engineer's tables show the average rate per passenger per mile to have been 2.5149 cents in 1879, and 2.5073 in 1880. These are made by including the passenger earnings of the elevated railroads in the total, while their passenger mileage (which is not reported) is not included in the total by which the earnings are divided to ascertain the average rate. We have omitted the earnings of the elevated roads, and the average rates we give are those of all the other roads reporting.

It will be seen that there has been a considerable decrease in the average passenger rate in the last two years, which is probably largely due to the very large immigrant traffic carried then by the trunk lines.

In spite of the increase of 15 per cent. in the average freight rate in the last year, it was then lower than in any year except 1879, and at the rates of 1878 even, the traffic of 1880 would have yielded \$6,370,000 more than was actually earned then. Since 1873, the decrease in the average freight rate has been 42½ per cent.; since 1876, 13 per cent.

That the railroads have been able to endure this great reduction in rates has been largely due to the larger average freight-train loads that they have been



carrying, as shown above. Since 1873 the increase has been no less than 82 per cent., and since 1876 it has been 30 per cent. The average earnings per freight-train mile varied much less. They were about \$1.57 in 1873, and \$1.41½ in 1874, and were \$1.34 in 1879 and \$1.64 in 1880, and larger than in any other year of the eight.

The expenses, net earnings and disbursements of the New York roads have been:

Expenses:	1879-80.	1878-79.	Increase.	P. c.
Maintenance of road...	\$14,715,375	\$13,549,120	\$1,166,255	8.6
Maintenance of equip- ment.....	11,091,556	9,911,222	2,480,334	27.0
Conducting transporta- tion.....	41,234,384	36,558,274	4,676,110	12.8
Total.....	\$67,041,315	\$59,918,616	\$8,322,699	14.0
Allotted to passengers.....	19,658,896	17,907,351	2,051,545	11.6
" " freight.....	47,982,419	41,711,265	6,271,154	15.0
Net earnings.....	\$45,937,217	\$35,204,390	\$10,732,827	30.5
Disbursements for—				
Inter st.....	16,977,934	12,894,806	4,083,028	32.1
Dividends.....	18,058,535	15,611,379	3,047,156	19.5
Total.....	\$35,636,469	\$28,506,285	\$7,130,184	25.0
Surplus of net earn.....	10,300,748	6,698,105	3,602,643	53.8

The increase in total working expenses was large, 14 per cent., against an increase of 12½ per cent. in total traffic. The year before there was an increase of but 6½ per cent. in expenses, and the year before that scarcely any at all. In 1880 we may presume that expenditures were made for maintenance which were properly due to previous years, when profits were smaller. For the three years previous the maintenance of road expenses had varied very little from \$13,500,000, while the traffic had been increasing very rapidly; in 1880 we see them increased at once nearly \$1,170,000; and the expenses for maintenance of equipment, which had varied only between \$9,200,000 and \$9,500,000 for three years before 1880, in that year increased nearly \$2,500,000, which is 27 per cent.

The increase in net earnings is enormous, no less than 35 per cent., amounting to \$10,700,000. Yet the net earnings of 1879 were larger than in any previous year since 1872. But a considerable part of the increase over 1878 (as of expenses) is due to the elevated railroads, which, having an insignificant mileage, earned \$3,525,000 gross and \$1,644,000 net in 1879 and \$4,613,000 gross and \$1,969,000 net in 1880.

#### The Summer Packing Season.

Hog packing in the Northwest has now been reported for what is called the "summer" packing season, which includes the eight months from March 1 to Oct. 31. The number of hogs packed was 4,772,934 this year, against 5,418,408 last, there being a decrease of 645,474, or 12 per cent. As usual, Chicago is far ahead of all other places, and its decrease is not quite so great in proportion as that of the other places. The following gives the number of hogs packed at the different packing towns:

	1881.	1880.	Inc. or Dec.	P. c.
Chicago.....	2,700,000	2,571,127	D. 271,127	9.0
Kansas City.....	455,111	239,720	I. 215,391	90.0
St. Louis.....	350,000	410,000	D. 60,000	14.6
Cleveland.....	236,410	324,440	D. 88,030	27.1
Cedar Rapids.....	200,000	259,065	D. 59,065	29.5
Indianapolis.....	168,000	383,165	D. 215,165	56.0
Milwaukee.....	160,000	136,619	I. 23,381	17.0
Cincinnati.....	145,000	110,556	I. 34,444	31.0
Ottumwa, Iowa.....	76,338	57,334	I. 19,104	33.4
Des Moines.....	52,234	56,526	D. 4,292	7.7
Omaha.....	48,630	.....	I. 48,630	.....
St. Joseph, Mo.....	40,000	18,000	I. 22,000	122.2
Detroit.....	38,000	44,317	D. 6,317	14.0
Sabula, Iowa.....	20,000	33,492	D. 13,492	40.0
Atlantic, Iowa.....	15,000	10,500	I. 4,500	43.0
Atchison, Kan.....	223,447	223,447	D. 223,447	100.0
Other places.....	68,211	45,200	I. 23,011	51.0
Total.....	4,772,934	5,418,408	D. 645,472	12.0

The most notable change is the disappearance of Atchison from the ranks of pork-packing towns though it stood seventh on the list a year ago, and packed nearly as many as Kansas City in the summer season, and the very large increase of Kansas City, which appears to have taken Atchison's business, and this year stands next to Chicago, and far above St. Louis, which stood second last year.

The packing may be divided geographically as follows:

	1881.	1880.	Inc. or Dec.	P. c.
East of Mississippi.....	3,460,621	3,981,824	D. 521,203	13.1
Mo. River points.....	543,741	481,167	I. 62,574	13.0
Iowa towns.....	383,572	417,417	D. 33,845	8.0
St. Louis.....	350,000	410,000	D. 60,000	14.6
Unnamed.....	55,000	128,000	D. 73,000	57.0
Total.....	4,772,934	5,418,408	D. 645,472	12.0

The packing business is comparatively new in Iowa and at the Missouri River towns. The latter is the only group that shows an increase, and it is very nearly balanced by the decrease in Iowa; but this leaves the places west of the Mississippi (aside from St. Louis) with nearly the same business as last year, while at the packing towns further east there is a decrease of 581,251 head, from 4,391,824 to 3,810,621, or 13½ per cent.

It is to be expected that the hog-growing will increase more west than east of the Mississippi, as far as corn thrives, but packing does not necessarily follow the hog-growing. The extent to which it does so depends somewhat on the difference between the freight rates on provisions and those on packing-house products, and also, to some extent, on the market for what may be called the "waste products" of the hog. The weight to be shipped is in any event somewhat less than that of the live hogs, but the difference is not nearly so great as in the case of cattle. The western pack-

ing cities, like Chicago and St. Louis, have greatly injured the packing business of Atlantic cities, and this where freights are lower than west of Chicago. Such places as Chicago and Cincinnati, however, are compelled to maintain great packing establishments for the stock of hogs grown immediately around them, and these great establishments seem to have advantages which make it difficult for small packing-houses further west to thrive. Kansas City, however, is now a notable exception, and considering the limited corn-growing country west of it, its business it really an enormous one.

It should be remembered that these statistics are for the summer season only, and that the winter business is quite differently distributed. Until recently nearly all the packing was done in winter, and there are still many establishments that do not pack in summer. In 1873 only 8½ per cent. of the hogs were packed in summer, and little more than half a million head. In 1876 less than 2,400,000 were packed in that season, and even in 1879 the number was but 4,050,000, against the 4,773,000 reported above. Last year 41.7 per cent. of the whole were packed in summer.

Chicago leads in summer packing more than in winter. Last winter it packed but 150,000 (6 per cent.) more than last summer, while Cincinnati packed nearly four times as many in the winter as last summer. Indeed, in the winter it stood next to Chicago (though it did not pack one-fifth as many as Chicago then), while last summer it was eighth on the list, and Chicago packed *nineteen times* as many as it. Louisville, which is a quite important packing point in winter, does not pack at all in summer.

For the year ending with October last the total number of hogs packed was 12,102,866 against 12,191,063 the year before—the decrease in the summer being counterbalanced by the increase in the winter. Receipts and shipments of live hogs at Chicago for the year ending with October have been:

	1880-81.	1879-80.	1878-79.
Receipts.....	6,697,122	6,782,516	6,639,619
Shipments.....	1,228,817	1,458,155	1,637,358
Excess of receipts.....	5,468,305	5,314,361	4,982,261

There has been very little variation in the receipts for three years, but the shipments have decreased from year to year—11.4 per cent. from 1879 to 1880 and 16.4 per cent. from 1880 to 1881. In the three spring months, being the first of what is known as the summer packing season, the receipts this year were much less than last, and somewhat less than in 1879; in the three summer months they were about the same as last year and much more than in 1879; in September there was a large increase over the other two years, but for October, which should reflect more closely than the previous months the effect of the new crop of corn, the receipts and shipments have been:

	1881.	1880.	1879.
Receipts.....	499,510	563,761	713,502
Shipments.....	103,700	145,135	182,908

The receipts this October are 17 per cent. less than last year and 34 per cent. less than in 1879.

It is true that a single month's business is not a sufficient basis by itself for calculating the future, as the weather and the occupations of the farmers and prices have a great deal of effect. A cold November favors packing, and last year the Chicago receipts were much greater than in any other month and 34½ per cent. more than in November, 1879.

The scarcity and high price of corn are likely to diminish very largely the number marketed the coming year. Hogs in this country are made of corn, and they probably consume half of all that is raised. It is precisely in the great hog-growing district that the corn crop is poor this year. It is better the further north we go, and corn and hog-growing are said to have been considerably increased recently north of the true corn belt, as in southern Wisconsin and Minnesota. There the corn crop is quite good this year, but the total product north of the north line of Iowa is insignificant in comparison with that further south.

Exports of hog products from the United States for the year ending with October were, in tons:

	1880-81.	1879-80.	Decrease.	P. c.
Pork.....	29,465	33,737	4,272	12.7
Bacon.....	333,761	383,857	50,096	13.0
Lard.....	180,766	190,458	9,692	5.6
Total.....	523,992	608,052	84,060	13.8

At the present time exports are only about half as great as a year ago at this time.

The shipments of hog products from Chicago for the year ending with October were 581,120 tons this year, against 636,564 last—a decrease of 55,444 tons, or nearly 9 per cent.

The Chicago Commercial Report has compiled, chiefly from reports of state auditors, a statement showing the number of hogs in each of the ten western states, beginning with Ohio on the east and including Minnesota, Nebraska and Kansas on the west. The totals in the ten states for five successive years have been:

	1877.	1878.	1879.	1880.	1881.
13,401,410	16,294,698	16,016,340	16,398,838	15,486,291	

The number this year is thus the smallest since 1877, but still only 5.4 per cent. less than last year. The number packed, however, depends as much on the corn crop as on the number of hogs. Decreases are shown in every state except Missouri, which, by the way, is shown to have had a larger number than any other state in each of the last three years, followed this year, in order, by Illinois, Iowa, Ohio and Indiana. We may divide the ten states into three groups; first, the three northern ones, which are out of the corn belt proper; second, the corn states east, and third,

those west of the Mississippi. The number in each group in successive years has been:

	Mich., Ill.	Wis. and Ind.	O., Ind. and Ia.	Neb., Mo. and Kan.
1877.....	840,018	7,556,810	5,004,562	
1878.....	1,029,531	8,252,147	6,993,020	
1879.....	1,393,502	7,169,300	7,457,138	
1880.....	1,398,184	50,748	7,112,298	7,898,395
1881.....	1,295,000	6,448,050	7,745,235	

\* No report from Michigan.

The apparent increase in the Northern group since 1878 is due to the omission of Michigan in 1877 and 1878. The Western group shows a rapid increase, while the Eastern tends rather to decrease. The percentage of the total in each group each year has been:

	1877.	1878.	1879.	1880.	1881.
Northern.....	6.3	6.3	8.7	8.5	8.4
Eastern.....	53.3	50.7	44.8	43.4	41.6
Western.....	37.4	43.0	46.5	48.1	50.0

The states west of the Mississippi have been making steady and rapid progress, and now have one-half of all the hogs, while in 1877 they had but three-eighths of them. And this is just what should be expected. Hogs are much more valuable in proportion to their weight than grain, and they save much freight, which is most important to the states most distant from market—that is, to those furthest west. A very considerable development may be expected hereafter in Kansas and Nebraska, but it will be limited by the fact that the western parts of those states are not favorable to corn-growing. In fact, the corn and hog-growing area of the country is more fully utilized at this time than its wheat-growing area. Little corn will be grown in Dakota, except in the southwestern part, and in Washington probably scarcely any—as, indeed, very little is produced anywhere on the Pacific coast. Kansas has shown little increase since 1877, but Nebraska has. By far the larger part of the gain of the states west of the Mississippi has been in Iowa and Missouri, which in 1877 had less than 30 per cent. of the hogs of the ten Western states, in 1878 32½ per cent., in 1879 35 per cent., in 1880 35½ and in 1881 38 per cent.

The three northern states, or rather Wisconsin and Minnesota, are reported to have been increasing their corn and hay production of late years, but these figures do not show it. Wisconsin has decreased every year since 1878, and Minnesota has been almost stationary, with little more than 200,000, which is one-eleventh Iowa's and one-eighteenth Missouri's number this year. The three northern states together have less than any one of the others except Nebraska and Kansas, and not half as many as Missouri or Illinois.

The ten states named, and principally seven of them, seem likely to continue to be the chief producers of hogs for market in America. They are peculiarly fitted for corn-growing, having a larger average yield, probably, than any other states that produce much, and most of their land being fitted for it. They have been driven out of cattle-growing to a considerable extent by the plains country of the Far West, where the land has cost nothing and the cattle need not be fed in winter. A large area further west, northwest and on the Pacific coast competes with them in wheat-growing, though so far they have not at all suffered by the competition. But nowhere north, south, east or west of them is there any such corn-growing country, and they can probably grow hogs to better advantage than any other part of the world. The great profits made on wheat for four years past in the three of the states east of the Mississippi has tended to divert attention there from corn and hogs, and probably is the chief cause of the moderate reduction in the number of their hogs. The poor crops of wheat this year may bring them back to corn; for, though the corn is a poorer crop than wheat this year in some parts of this country, still corn is much the surest crop—in fact it very rarely fails.

Though hogs make less freight than grain, they sometimes make more railroad freight. They are carried by rail exclusively, and will bear carrying great distances—the product, indeed, being sent all over the globe. Grain may go down the lakes or the Mississippi, and a very large part of all that goes from the Northwest is carried by these water routes.

#### Record of New Railroad Construction.

This number of the Railroad Gazette contains information of the laying of track on new railroads as follows:

*Kankakee & Seneca*.—Extended west by north to Seneca, Ill., 33 miles, completing the road.

*Chicago, Milwaukee & St. Paul*.—On the Council Bluffs Extension track is laid from Marion to a point ten miles west of Tama, Ia., an extension of 40 miles. A branch has been completed from Rockton, Ill., south to Rockford, 14 miles.

*Milwaukee, Lake Shore & Western*.—The Northern Extension is extended from Antigo, Wis., north to Kempster, 11 miles.

*Missouri, Kansas & Texas*.—The Southwestern Extension is extended south by east to Hillsboro, Tex., 25 miles.

*Missouri Pacific in Nebraska*.—Track laid from Hiawatha, Kan., north to Falls City, Neb., 15 miles.

*New York & New England*.—A branch has been completed from the main line near Boston, Mass., to Dedham, 1½ miles.

*Roswell*.—Extended from Dunwoody, Ga., north by west to Roswell, 3 miles. Gauge, 3 ft.

*St. Louis, Iron Mountain & Southern*.—The Louisiana Branch is extended from the Little Missouri River south-east to Chidester, Ark., 8 miles.

*Tionesta Valley*.—Track laid from Sheffield, Pa., to Lower Sheffield, 2 miles.



**Wheeling & Lake Erie.**—Track laid from Massillon, O., northwest to Huron, 80 miles.

This is a total of 232½ miles of new railroad, making 6,241 miles this year, against 5,056 miles reported at the corresponding time in 1880, 3,042 miles in 1879, 1,840 miles in 1878, 1,892 miles in 1877, 1,970 miles in 1876, 1,150 miles in 1875, 1,664 miles in 1874, 3,276 miles in 1873 and 6,202 miles in 1872.

THE RECEIPTS OF BALTIMORE are popularly credited almost wholly to the Baltimore & Ohio Railroad, which did indeed for a long time give it so much more business than any other road that it is not strange that it should be forgotten that the Pennsylvania Railroad Company has one of its outlets at Baltimore, through the Northern Central Railway. Of late years the deliveries by the latter have increased greatly, and they now will very well bear comparison with those by the Baltimore & Ohio, especially when we consider that Baltimore is but one and that the smallest of the three Atlantic termini of the great Pennsylvania system. The receipts at Baltimore in 1880 by each of these lines is given in the report of the Baltimore Commercial Exchange. Those of the more important staples are given below, in tons:

	Balt. & Ohio.	Northern Cent.
Flour.....	60,932	50,516
Wheat.....	498,501	435,534
Corn.....	204,364	172,290
Other grain.....	17,405	20,758
All grain and flour.....	761,202	680,093
Petroleum.....	6,386	84,418
Live stock.....	120,732	14,173
Provisions.....	47,385	43,075
Lumber.....	31,797	45,205
Coal and coke.....	1,328,496	366,960

Of grain and flour, the Baltimore & Ohio brought to Baltimore only 102,000 tons (15 per cent.) more than the Northern Central, and the latter brought 93 per cent. of the petroleum. But the Baltimore & Ohio brought nine-tenths of the live stock, and nearly four-fifths of the coal, the latter item on the Baltimore & Ohio being one-third more than all the other items (mentioned above) put together. It brings the Cumberland coal to Baltimore—a coal which is shipped thence in large quantities. The Northern Central brings chiefly anthracite, used chiefly for domestic purposes, and not shipped from Baltimore in considerable quantities.

It is quite possible that the deliveries of the Northern Central were exceptionally large in 1880. In that year the New York Central, or rather the Vanderbilt roads in the West, worked actively for a share of the Baltimore business, which was carried into Baltimore by the Northern Central. The amount so carried was very considerable, and made perhaps a seventh of all the through freight carried to Baltimore by the Northern Central.

Sufficient attention has not been given to the importance to Baltimore of its connection with the vast Pennsylvania system, by which it has its shortest connection with Chicago and all the lake cities, and is able to share in the grain shipments *by lake*, which cannot well use the Baltimore & Ohio. The shipments by the lake-and-rail route, carried from the upper lakes to Buffalo on Erie by propeller lines owned or controlled by the trunk lines, have long been very large and tend to increase, and apparently are profitable at rates which leave no margin to the all-rail lines or to the canal boats. From Erie or Buffalo by the Northern Central to Baltimore the distance (429 and 422 miles) is nearly the same as from Buffalo to New York by the Erie.

THE OCTOBER EXPORTS OF BREADSTUFFS are reported by the Bureau of Statistics for the whole United States as follows, in bushels:

	1881.	1880.	Decrease.	P. c.
Flour.....	1,509,736	2,883,987	1,374,251	47.7
Wheat.....	7,340,702	15,780,191	8,439,489	53.5
Corn.....	4,974,069	8,535,067	3,560,998	41.7
Other grains.....	171,702	642,448	470,686	73.3

This year no less than 45.6 per cent. of the total wheat exports were from San Francisco, 31.8 from New York, and not 10 per cent. from any other place. Portland, Or., exported more than Boston and Philadelphia together, but a little less than Baltimore. Of the corn, 53 per cent. went from New York, 18.3 from Philadelphia, 13.1 from Boston, and only 7 per cent. from Baltimore, which in one or two years exported more than New York. Chicago exported nearly as much as Baltimore and 6 per cent. of the whole. New Orleans makes scarcely any figure in the month as an exporter of grain.

There is a decrease in the value of the breadstuffs exports in October from \$25,973,570 last year to \$14,839,914 this, amounting to \$11,133,656, or 43 per cent.

The percentage of the total value of the breadstuffs exports in October from leading ports this year and last have been:

	New York.	San Fran.	Baltimore.	Boston.	Phila.	Portland, Or.	N. O.
1881.....	45.7	24.0	8.7	6.8	6.6	4.2	0.3
1880.....	53.4	8.7	14.9	4.3	10.2	0.9	3.6

The gains at San Francisco and Portland are extraordinary, and these two places exported this year 28.2 per cent. of the total breadstuffs value, against 9.6 last year, and yet the Pacific coast production was much less this year than last. Last year, however, the abundance of the crops was not understood, and shipping enough to carry it did not arrive, so that about half the surplus was left to be exported this year, and freights have been so high that vessels from all over the world have been going for this Pacific coast wheat, which has been supplying the European demand, while the wheat of the Mississippi valley has been staying at home.

WEST-BOUND RATES were advanced last Monday, after four days' notice, by the Pennsylvania Railroad, to rates

about half way between those promulgated Aug. 6 and the regular rates for some two years before that. All these rates are shown below, in cents per 100 lbs., from New York to Chicago:

Rate of	1.	2.	3.	4.	5.	Sugar.
Nov. 14.....	60	50	40	28	28	28
Aug. 6.....	45	32	26	19	19	19
Before						
Aug. 6.....	75	60	50	40	35	25

Since Aug. 6 sugar and the articles in the fifth class (introduced in September, 1879, and composed chiefly of iron) have been included in the fourth class.

The advance last Monday is about 50 per cent. on the third and fourth classes, 56 per cent. on the second and 33½ on the fourth—substantial advances. Unfortunately, however, there are contracts which will cover probably half of the freight and which will not expire until January. There is, however, a large amount of freight shipped to small places east of Chicago and St. Louis, which is not contracted, and it is believed that the rates can be obtained on this without difficulty, and there seems to be a general disposition to advance rates in that direction. The advance comes after the busy season has closed—the busiest season, so far as west-bound freights are concerned, in the history of the country; and it will not have a great deal of effect until January. Of course it may not be maintained then; there is no agreement about it; but, as we have said, the indications are that now at last all parties are tired of losing money, at least so far as this particular traffic is concerned.

CHICAGO RAIL SHIPMENTS EASTWARD for the week ending Nov. 5 were 53,229 tons (against 45,013 the corresponding week of last year), of which the Chicago & Grand Trunk had 8.6 per cent., the Michigan Central 24.2, the Lake Shore 29.5, the Fort Wayne 19.3, the Pan-handle 14.1, and the Baltimore & Ohio 4.3 per cent. This was the second week in which, nominally, there were different rates by different roads, but the changes in proportions have no particular significance, and we are informed that in reality the advanced "regular" rates announced by the several companies in Chicago have been the exception and not the rule, the rates at which shipments were actually made varying from the lowest of the season (probably on previous contracts) up to something like the figures recently announced, and shipments being taken at a great many different rates, each apparently the result of a private bargain between the shipper and the carrier. A great many shipments are made at rates higher than any received two weeks ago, but most of them are less than the announced rate.

For the week ending Nov. 12 the report of the Chicago Board of Trade shows shipments amounting to but 40,255 tons, of which 6,384 were flour, 23,356 grain and 10,554 provisions. Of these 8 per cent. went by the Chicago & Grand Trunk, 24.5 by the Michigan Central, 33.8 by the Lake Shore, 15.6 by the Fort Wayne, 14.7 by the Pan-handle and 3.4 by the Baltimore & Ohio—figures which will be changed, doubtless, in the complete report.

OCTOBER EARNINGS have been reported so far by 49 railroads, whose aggregate length was 39,314 miles this year, against 34,523 last, an increase of 4,791 miles, or nearly 14 per cent. Their earnings increased from \$20,990,930 last year to \$28,292,530 this, showing a gain of \$2,301,600, or 11 per cent., while in their average earnings per mile there was a decrease from \$608 last year to \$592 this, or 2½ per cent. There are few large increases (in total earnings) except on roads that have a much larger mileage this year. The decreases are not very large, but there are decreases on some roads in spite of a considerable increase in mileage, as on the Wabash. The roads from Chicago southwest all show decreases—both lines of the Illinois Central, the Chicago & Alton, the Hannibal & St. Joseph, and so do most of the east and west roads crossing Illinois, as the Indiana, Bloomington & Western, the Lake Erie & Western, the Wabash and both lines of the Terre Haute Company. Southern Illinois is a bad field for freight this year, and several roads must feel it quite severely, including some that do not report monthly. The lines north of the latitude of Chicago seem to have done better, but most of them have a mileage so much greater this year that an inspection of their total earnings alone does not suffice. However, there is no doubt that the crops have turned out better in Wisconsin, Minnesota and Dakota this year than in the states further south, though the wheat crop of the former could not be called a good one.

THE NEW FAST TRAINS TO CHICAGO pursue their way without attracting much attention. They are put on in the dull season for passenger traffic, when they could hardly be expected to be crowded, but we learn that they are very fairly patronized. A more remarkable thing is that the Pennsylvania Railroad, though its rate to Chicago is \$14 against \$9.25 by the other roads, gets a very fair share of the traffic. The Pennsylvania people say that though they get fewer passengers they receive more money than if they made the lower rate. We do not know that the experiment was ever tried before of making different rates for an important traffic by lines having substantially equal accommodations, and the result of this experiment may make the railroads less ready to follow a rival in reckless cutting of rates.

LAKE RATES have continued very low for the last two weeks, and recent engagements have been made at 2 cents per bushel for corn from Chicago to Buffalo. Very few cargoes have been taken, and these almost entirely by propellers, and the sail grain fleet has been practically laid up.

At this time last year the vessels were getting 6 to 6½ cents.

Canal rates stood at 5 cents for corn and 5½ for wheat from Buffalo to New York until this week, when they fell half a cent. At this time last year the rates were 7½ and 8 cents.

It is doubtful if any through shipments by canal will be made after this week.

Ocean rates are higher, in spite of the fact that exports are smaller than before this year. Wednesday's quotations were 4¼d. a bushel by steam from New York to Liverpool. The rate at this time last year was 7¼d.

From Chicago to Liverpool costs now (including transfers) about 18 cents a bushel for corn, against 32½ cents last year.

EAST-BOUND RATES are now nominally 20 cents per 100 lbs. for grain and flour (eighth class), and 25 for provisions (seventh class) from Chicago to New York. A week ago Monday the Vanderbilt roads announced an advance of five cents on these rates, but this was not followed by the other roads. But so far as we can learn there are no regular rates now any more than before the first announced advance Nov. 1, but shipments are made from 20 cents all the way down to 8 cents per 100 lbs. The chief difference is that some freight is carried at higher rates than were made on any freight before this month. The shipments are light, in spite of the fact that the lake vessels are taking very little, and navigation will close in two weeks.

## General Railroad News.

### MEETINGS AND ANNOUNCEMENTS.

#### Meetings.

Meetings will be held as follows:  
Buffalo, New York & Philadelphia, special meeting, at the office in Buffalo, N. Y., Dec. 3, at 11 a. m., to vote on a proposed increase of capital stock to \$7,000,000, one-half to be preferred and one-half common stock; also to vote on certain leases and agreements.  
Richmond, Fredericksburg & Potomac, annual meeting, at the office in Richmond, Va., Nov. 23, at 11 a. m.  
Richmond & Danville, annual meeting, at the office in Richmond, Va., Dec. 14, at noon.

#### Railroad Conventions.

The Railway Conductors' Life Insurance Association of the United States and Canada will hold its annual meeting at the St. Charles Hotel, in New Orleans, beginning at 10 a. m. on Dec. 7. The meeting will last probably two days.

#### Dividends.

Dividends have been declared as follows:  
Boston, Concord & Montreal, 3 per cent., semi-annual, on the preferred stock, payable Nov. 15.  
Hanover Junction, Hanover & Gettysburg, 2 per cent., semi-annual, payable Nov. 7.  
Boston & New York Air Line, 1 per cent., quarterly, payable Dec. 1. Transfer books close Nov. 20.  
Northern (New Hampshire), 3 per cent., semi-annual, payable Dec. 1.

#### Foreclosure Sales.

The Rhinebeck & Connecticut road was sold Nov. 10 under a decree of foreclosure granted by the New York Supreme Court, and was bought by Mr. Thomas Cornell. The road extends from Rhinecliff, N. Y., to Boston Corners, 35 miles, and was built chiefly to carry coal (ferried across the Hudson from the Delaware & Hudson Canal terminus at Rondout) to the Connecticut Western. It has never earned much more than its working expenses. By the last report the funded debt was \$800,000; floating debt, \$199,595; stock, \$679,300. We believe the bonds were largely held by the Delaware & Hudson Canal Company, or in the interest of that company.

#### Railway Passenger and Freight Conductors' Mutual Aid and Benefit Association.

A dispatch from Chicago, Nov. 15, says: "The seventh annual convention of the Railway Passenger & Freight Conductors' Mutual Aid & Benefit Association of the United States and Canada began its sessions here to-day, with about 100 delegates present. First Vice-President Robert Laughlin occupied the chair. An address, written by the absent President, James G. Sherman, was read. The report of Charles Huntington, of the Chicago & Alton Railroad, the Secretary and Treasurer, was read, showing the receipts for the year \$57,267; expenses, \$50,350.

#### Southern Association, General Passenger and Ticket Agents.

The annual meeting of this Association was held in Atlanta, Ga., Nov. 9.

The following delegates were present:  
C. E. Atmore, Louisville & Nashville.  
W. L. Danley, Nashville, Chattanooga & St. Louis.  
J. L. Taylor, Savannah, Florida & Western.  
C. A. Taylor, Richmond, Fredericksburg & Potomac.  
E. R. Dorsey, Georgia Railroad.  
George A. Whitehead, Georgia Central.  
E. P. Wilson, Cincinnati Southern.  
D. W. Appler, Georgia Central.  
D. C. Roberts, Memphis & Little Rock.  
D. C. Allen, South Carolina Railroad.  
W. J. Houston, Richmond & Danville.  
J. W. Coleman, Great Jackson Route.  
B. W. Wrenn, Western & Atlantic.  
C. J. Waller, Mobile & Ohio.  
J. R. Ogden, East Tennessee, Virginia & Georgia.  
J. J. Griffin, Macon & Brunswick.  
New Orleans was chosen as the next place of meeting, which will occur next May.

Officers for the ensuing year were then elected as follows: President, C. P. Atmore; Vice-President, B. W. Wrenn; Secretary, D. C. Allen.

The general subject of fall and winter rates was referred to the Rate Committee, and the question of reduced rates to the exposition also came up, but as nearly all the lines had already adopted very low rates there was no necessity for any action by the convention.

After the business was done, the Association was invited by the resident agents to a dinner on the Cotton Exposition grounds. They inspected all the buildings and their contents, and the proceedings closed with a very enjoyable dinner.



# ELECTIONS AND APPOINTMENTS.

**Associated Railroads of Virginia and the Carolinas.**—Mr. C. W. Harwood has been appointed Soliciting Agent, with office in Richmond, Va.

**Baltimore & Ohio.**—Mr. Wm. M. Buchanan has been appointed Assistant Auditor. He was recently on the New York City & Northern road.

**Boston & Providence.**—At the annual meeting in Boston, Nov. 16, the following directors were chosen: Joseph W. Balch, Thomas P. I. Goddard, Wm. R. Robeson, Royal C. Taft, Francis M. Weld, Henry A. Whitney, J. Huntington Wolcott. The board re-elected Henry A. Whitney President; Winslow Warren, Clerk; B. B. Torrey, Treasurer; A. A. Folsom, Superintendent.

**Burlington, Cedar Rapids & Northern.**—Mr. H. F. White is appointed Chief Engineer, in place of Wm. P. Clark, resigned.

**Chicago, Burlington & Quincy.**—The following circular has been issued from the General Manager's office: "Mr. Henry B. Stone has been appointed General Superintendent of all roads operated by this company east of the Missouri River, in charge of the operating department, with office in Chicago, to take effect Nov. 15. Mr. Stone will, for the present, continue to act as Superintendent of the Locomotive and Car Department."

**Mr. A. Forsyth** has been appointed Master Mechanic of the St. Louis & Rock Island Division, with office at Beardstown, Ill., in place of L. E. Johnson, transferred to the Chicago Division. Mr. T. J. Bromley, an old engineer, succeeds Mr. Forsyth as foreman of the round-house at Beardstown.

**Mr. J. H. Felton** has been appointed Foreman of the blacksmith shops of the car department at Aurora, Ill., in place of James Flowers, resigned.

**Chicago & Grand Trunk.**—Mr. Herbert Roberts is appointed Mechanical Superintendent, with office at Ft. Gratiot, Mich.

**Chillicothe & Kansas City.**—The directors are: E. J. Broadbent, D. W. C. Edgerton, Henry Hatch, G. G. Henry, W. B. Leach, A. McVey. Office at Chillicothe, Missouri.

**East Tennessee, Virginia & Georgia.**—At the annual meeting in Knoxville last week the following directors were chosen: C. M. McGhee, E. G. Sanford, Knoxville, Tenn.; W. C. Kyle, Whitesburg, Tenn.; Joseph R. Anderson, Bristol, Tenn.; E. W. Cole, Chattanooga, Tenn.; R. H. Richards, Atlanta, Ga.; T. G. Barrett, Augusta, Ga.; Calvin S. Brice, Lima, O.; A. N. Dennison, Samuel Thomas, Columbus, O.; George J. McGourky, B. G. Mitchell, Nelson Robinson, George I. Seney, Samuel Shethar, New York.

**El Moro, Trinidad & New Mexico.**—Mr. James M. Johns is President, with office at Trinidad, Col.

**Hudson River Tunnel Construction Co.**—This company has been organized with the following directors: Charles G. Franchlyn, John P. Jones, D. O. Mills, Joseph G. Mills, Trenor W. Park. The board has elected Trenor W. Park President; Frederic B. Jennings, Secretary and Treasurer.

**Illinois Midland.**—The office of the Car Accountant has been removed from Decatur, Ill., to Terre Haute, Indiana.

**Kansas & Texas Southern.**—The directors of this new company are: John Buckhardt, James Maroney, C. W. Parker, H. R. Rowley, J. M. Weldeken, Dallas, Tex.; W. Allen, Leavenworth, Kan.; R. R. Harding, Rockford, Ill.; D. B. Waterman, Aurora, Ill.; Thomas Cratty, G. W. Kreisinger, Chicago.

**Long Island.**—Mr. C. M. Heald is appointed General Traffic Manager, with office in Long Island City, N. Y. He will have charge of both the freight and passenger departments.

**Louisville, New Albany & Jefferson Belt.**—The directors of this company are: James P. Applegate, John S. Day, Morris McDonald, George Lyman, J. H. Stotsenburg, Jeffersonville, Ind.; Simon Goldbach, New Albany, Ind.; Andrew J. Hay, Charleston, Ind.; L. G. Matthews, Indianapolis, Ind.; S. P. Walters, Richmond, Ky.; St. John Boyle, E. T. Trabue, R. S. Veech, Bennett H. Young, Louisville, Ky.

**Manhattan.**—Mr. D. W. McWilliams has been chosen Secretary, in place of F. E. Worcester, resigned. Mr. McWilliams has been for several years Treasurer of the St. Louis, Iron Mountain & Southern Company.

**Memphis & Charleston.**—At the annual meeting in Huntsville, Ala., Nov. 15, the following directors were chosen: W. R. Rison, Huntsville, Ala.; Wm. Farrington, R. D. Frasier, J. A. Hayes, Jr., Memphis, Tenn.; Jere. Baxter, Wm. Duncan, G. M. Fogg, James D. Porter, Nashville, Tenn.; C. H. Phinizy, Augusta, Ga.; Daniel L. Evans, Vernon K. Stevenson, Charles T. Swan, New York. This is an entirely new board, not one of the old directors remaining, and is a board not at all friendly to the East Tennessee, Virginia & Georgia Company, which leases the road.

The board elected Vernon K. Stevenson President and Jere. Baxter Vice-President, replacing E. W. Cole and C. M. McGhee.

**Mexican National.**—The following circular has been issued by General Manager G. Clinton Gardner:

"W. C. Wetherill having resigned as Chief Engineer of this company, the same is accepted, to date from Oct. 1.

"The office of the Chief Engineer will be temporarily in charge of the Consulting Engineer, and all reports and communications will be forwarded as heretofore to the Chief Engineer's office, city of Mexico.

"The instructions of the Consulting Engineer, Mr. W. Cross Buchanan, will receive the prompt attention of all officers and employees of the Engineering Department, and all communications will be addressed to his office, calle Cadena No. 11, city of Mexico."

**Monadnock.**—At the annual meeting in Peterboro, N. H., Nov. 16, the following were chosen: President, H. K. French; Directors, Oscar H. Bradley, John H. Fairbanks, Wm. G. Livingston, Willis Phelps, J. S. Rumrill, Peter Upton; Clerk and Treasurer, Wm. G. Livingston. The road is leased to the Cheshire Company.

**New Haven & Derby.**—At the annual meeting in New Haven, Conn., Nov. 15, the following directors were chosen: Isaac Anderson, Charles Atwater, J. N. Bartholomew, G. F. Cowles, N. S. Dawson, Charles L. English, F. Farrell, E. N. Shelton, G. W. Shelton, Joel A. Sperry, N. D. Sperry, M. F. Tyler, Thomas Wallace.

**New York City & Northern.**—Mr. W. M. Buchanan having resigned the position of General Freight and Passenger Agent of this road, to accept the Assistant Auditorship of the Baltimore & Ohio Railroad, Mr. H. C. Willets has been appointed to succeed him, dating Nov. 15.

**New York & New England.**—Mr. T. W. Kennan, Train-Master, is appointed Assistant Superintendent of the Eastern Division, and will perform such duties as may from time

to time be assigned to him by the Superintendent of Transportation and of the Eastern Division. Mr. Kennan was formerly on the Ohio & Mississippi road.

**Oley Valley.**—Mr. H. M. R. Whitman has been appointed Resident Engineer, and Mr. Henry T. Kendall Consulting Engineer.

**Ozark & Iron Mountain.**—The directors of this new company are: Stephen D. Barlow, John C. Brown, R. S. Hayes, H. M. Hoxie, John W. Harrison, F. J. Portis, A. W. Soper, all of St. Louis.

**Pennsylvania Company.**—The following circulars have been issued by General Manager D. W. Caldwell:

"Mr. Joseph Wood is appointed Superintendent of Motive Power for the lines operated by this company. His office will be at Fort Wayne, Ind. To take effect Nov. 15."

"Mr. C. D. Law is appointed Superintendent of the Western Division Pittsburgh, Fort Wayne & Chicago Railway, in place of C. D. Gorham, resigned. To take effect Nov. 15."

Mr. Warner M. Newbold has been appointed Chief Train Dispatcher of the Eastern Division of the Pittsburgh, Ft. Wayne & Chicago, with office at Allegheny City. Mr. Wood has been Assistant to Mr. T. N. Ely, Superintendent of Motive Power of the Pennsylvania Railroad. His present office is a new one.

**Pittsburgh & Western.**—Mr. W. L. Hofecker is appointed Master Mechanic, with office in Zelenople, Pa.

**Pullman's Palace Car Co.**—Mr. Wm. H. Reed is appointed Superintendent of the Eastern Division, with office in Boston, in place of Thomas H. Clark, resigned. Mr. C. P. Krauth, Jr., late assistant at Jersey City, succeeds Mr. Reed as Assistant Superintendent Eastern Division, with special charge of the Boston District.

Mr. W. M. Wadsworth has been appointed Receiving Cashier at St. Paul, Minn. Mr. T. E. Rice, late at Chicago, succeeds Mr. Wadsworth as Assistant Superintendent in charge of the St. Paul District.

**Richmond & Danville.**—Major Peyton Randolph has been appointed Assistant General Manager of this road and its leased and controlled lines. He was recently General Superintendent of the Virginia Midland.

**St. Louis, Iron Mountain & Southern.**—The following circular has been issued by Vice-President R. S. Hayes: "W. A. Kendall, Commissioner of the St. Louis, Iron Mountain & Southern lands in Missouri, having resigned, that position has been abolished, and the duties of S. D. Barlow, Secretary, are extended to embrace the general supervision of all matters relative to right of way, lands, and real estate of this company in Missouri, and he will give such instructions relative to the same as may be necessary."

"The Secretary will also have charge of all matters pertaining to the insurance upon the property of this company."

**Selma & Greensboro.**—Mr. E. J. Fallon has been appointed Auditor, with headquarters at Selma, Ala. All correspondence relative to the auditing and freight and ticket departments should be addressed to Mr. Fallon.

**Toledo, Delphos & Burlington.**—Mr. J. H. F. Wiers has been appointed Superintendent of Motive Power and Purchasing Agent, with headquarters in Toledo, O. Mr. Wiers has been for some months past Manager of the Chicago Works of Pullman's Palace Car Company, and was previously Master Car-Builder of the New York, Pennsylvania & Ohio road.

**Utica & Black River.**—At the annual meeting in Utica, N. Y., Nov. 9, the following directors were chosen: John Thorn, John F. Maynard, Isaac Maynard, Abijah J. Williams, Edmund A. Graham, Russell Wheeler, Abram G. Brower, William J. Bacon, Theodore S. Sayre, Lewis Lawrence, Robert L. Kennedy, Daniel B. Goodwin, Fred S. Easton; inspectors of election, Charles P. Leonard, B. F. Ray, C. H. Sayre.

The board elected John Thorn President; J. F. Maynard, Vice-President; W. E. Hopkins, Secretary; Isaac Maynard, Treasurer; Isaac Maynard, E. A. Graham, Russell Wheeler, A. J. Williams and A. G. Brower, Executive Committee.

**Virginia Midland.**—The following circular announces officially a change already noted. It is dated Nov. 14:

"Major Peyton Randolph having resigned the position of General Superintendent of this road the following appointments are announced to take effect on the 15th inst.:

"1. Col. T. M. R. Talcott has been appointed General Manager of this company, and is charged with the supervision of the operations and traffic of the road.

"2. Mr. W. M. S. Dunn has been appointed Engineer and Superintendent of this company.

"They will be respected accordingly by all officers, agents and employees of this road."

**Wabash, St. Louis & Pacific.**—Mr. Arthur A. Hobart has been appointed Superintendent of the Chicago Division. Mr. Hobart was formerly Division Superintendent on the Chicago & Northwestern and the Chicago, Burlington & Quincy, and has lately served as Superintendent on the Troy & Boston and the Boston & Lowell roads.

**Western Maryland.**—Mr. Albert L. Gardner has been appointed Master of Transportation, with office in Baltimore. He was recently on the Cumberland Valley road.

# PERSONAL.

—Mr. J. H. F. Wiers, Manager of the Chicago Works of Pullman's Palace Car Company, has resigned in order to accept a position on the Toledo, Delphos & Burlington road.

—Mr. Albert L. Gardner, of Chambersburg, Pa., for seven years past Train-Master of the Cumberland Valley road, has resigned that position to accept one on the Western Maryland road.

# TRAFFIC AND EARNINGS.

## The Railroad War.

A Chicago dispatch of Nov. 15 says: "The agents of the Eastern trunk lines here are taking business regardless of tariff, and shippers are making the most of the demoralization which prevails. It is probable, however, that the roads will soon adopt a uniform tariff. Representatives of the trunk lines from the East are in the city and in consultation on the question of rates. It is said that they are here to end the present disastrous competition and that they will probably accomplish their object."

The Pennsylvania Railroad on Nov. 11 announced the following rates on west-bound freight per 100 lbs. from New York to Chicago: First-class, 60 cents; second, 50; third, 40; fourth, 28. The advance is 15, 12, 10 and 8 cents on the respective classes.

## Crops.

The Agricultural Department reports that the information so far received indicates a decrease in yield of cotton per

acre, compared with last year, of 33 per cent. in Louisiana, 40 in Texas, nearly 60 in Arkansas, and 30 in North Carolina. In South Carolina, Georgia and Mississippi the prospect is for a crop not much less than last year's.

The average yield of wheat in 1881 appears to have been 10½ bushels per acre, against about 13 last year. The acreage was almost exactly the same, and the yield last year was very nearly 500,000,000, which makes the estimate for 1881 400,000,000 bushels. The November returns indicate an average yield of corn this year of 20½ bushels per acre for the whole country, against about 27½ last year. This indicates a decrease of about 425,000,000 bushels in the production.

## Railroad Earnings.

Earnings for various periods are reported as follows:

Ten months ending Oct. 31:	1881.	1880.	Inc. or Dec.	P. c.
Ches. & Ohio.....	\$2,208,722	\$2,215,505	I	\$53,217 2.5
Cin., I. St. L. & C.....	1,909,488	2,004,917	D	95,429 4.7
Clev., Mt. V. & Del.....	348,127	358,353	D	10,226 2.9
Des M. & Ft. D.....	330,588	257,049	I	73,539 28.4
E. Tenn., Va. & Ga.....	2,042,017	1,850,048	I	191,969 10.3
Hann. & St. Jo.....	1,836,272	2,074,600	D	238,327 11.5
Ill. C. Ill. lines.....	5,561,294	5,399,275	I	161,989 3.0
Iowa lines.....	1,524,289	1,448,658	I	75,631 5.2
Ind., Bloom. & W.....	1,318,723	1,321,924	D	3,201 0.2
Ind., Dec. & Spr.....	425,386	352,645	I	72,741 20.6
Lake Erie & West.....	1,153,584	981,916	I	171,668 17.6
Louis. & Nash.....	8,153,451	7,589,075	I	564,376 7.0
Mem. & Charleston.....	983,294	871,727	I	111,567 12.6
Mo., Kan. & Tex.....	6,415,797	4,870,994	I	1,544,803 31.4
Mo. Pacific.....	5,159,360	4,555,295	I	604,065 13.8
Mobile & Ohio.....	1,874,704	1,734,881	I	139,823 8.1
Peo., Dec. & Ev.....	569,440	354,733	I	214,693 60.5
St. L., A. & T. H., Main line.....	1,184,633	1,190,013	D	5,380 0.5
Belleville line.....	611,772	574,448	I	37,324 6.3
St. L., I. M. & So.....	4,976,594	4,976,594	I	946,372 19.0
Scioto Valley.....	352,886	362,512	I	9,626 2.7
Texas & Pacific.....	3,063,923	2,140,367	I	923,556 43.1
Nine months ending Sept. 30:				
B. & N. Y., Air Line.....	\$213,973	\$216,293	D	\$2,320 1.1
Net earnings.....	105,012	117,191	D	12,179 10.4
Bur., C. R. & No.....	1,602,297	1,465,745	I	136,552 9.3
Net earnings.....	425,949	529,967	D	104,018 19.6
Ches. & Ohio.....	2,031,219	2,003,685	I	27,534 1.4
Net earnings.....	622,567	515,775	I	106,792 20.6
Chl., Bur. & Quincy.....	15,423,831	15,129,854	I	293,977 1.9
Net earnings.....	7,531,927	8,087,127	D	555,200 6.8
Clev., Mt. V. & Del.....	310,131	323,142	D	13,011 4.0
Net earnings.....	36,358	44,957	D	8,599 23.4
Des. M. & Ft. Dodge.....	290,528	223,726	I	66,802 29.8
Net earnings.....	7,851	100,434	D	92,583 92.4
Mem., Pad. & No.....	173,346	149,341	I	24,005 16.1
Net earnings.....	38,125	32,288	I	5,837 17.8
Pad. & E. Town.....	380,309	287,409	I	92,900 34.3
Net earnings.....	93,408	55,750	I	37,658 41.9
West Jersey.....	789,876	690,026	I	99,850 14.4
Net earnings.....	354,925	256,621	I	98,304 38.2
Six months ending Oct. 30:				
Ohio Central.....	\$380,889			
Month of September:				
Chl., Bur. & Quincy.....	\$2,262,981	\$1,862,285	I	\$400,696 21.5
Net earnings.....	1,245,632	1,024,832	I	220,801 21.6
Chl. & West. Mich.....	96,177	81,780	I	14,397 17.5
Ohio Central.....	58,384			
West Jersey.....	102,931	76,592	I	26,339 34.2
Month of October:				
Chl. & East. Ill.....	\$160,743	\$126,022	I	\$34,721 27.6
Ches. & Ohio.....	237,503	211,820	I	25,683 12.0
Cin., I. St. L. & C.....	212,606	230,881	D	18,275 8.6
Clev., Mt. V. & Del.....	37,966	35,211	I	2,755 7.9
Col., Hock. V. & Tol.....	243,068	201,296	I	41,772 20.8
Des. M. & Ft. D.....	40,060	33,323	I	6,737 20.2
E. Tenn., Va. & Ga.....	315,644	303,518	I	12,126 4.0
Hann. & St. Jo.....	213,433	242,214	D	28,781 11.9
Ill. Cen., Ill. lines.....	655,867	668,110	D	12,243 1.9
Iowa lines.....	174,458	192,101	D	17,643 6.7
Ind., Bloom. & W.....	190,916	190,916	I	0 0.0
Ind., Dec. & Spr.....	47,005	44,424	I	2,581 5.8
Lake Erie & West.....	122,732	170,926	D	48,194 39.2
Louis. & Nash.....	1,009,100	1,000,323	I	8,776 0.9
Mem. & Charleston.....	110,776	125,731	D	14,955 13.5
Mo., Kan. & Tex.....	844,254	683,383	I	160,871 23.5
Mo. Pacific.....	693,730	606,028	I	87,702 14.5
Mobile & Ohio.....	1,529,211	1,647,713	D	118,502 7.8
Ohio Central.....	41,631			
Peoria, Dec. & Ev.....	59,233	48,293	I	10,940 22.8
St. L., A. & T. H., Main line.....	110,149	143,881	D	33,732 30.4
Belleville line.....	68,780	77,982	D	9,202 11.8
St. L., I. M. & So.....	719,239	688,365	I	30,874 4.5
Scioto Valley.....	47,976	30,172	I	17,804 59.3
Texas & Pacific.....	403,570	303,666	I	99,904 24.8
Tol., Del. & Bur.....	62,475	34,827	I	27,648 79.0
First week in November:				
Bur., C. R. & No.....	\$45,291	\$41,690	I	\$3,592 8.0
Chl., Mil. & St. P.....	370,000	349,152	I	20,848 5.6
Chl. & N. W.....	486,200	424,650	I	61,550 14.5
Chl., St. P. M. & O.....	85,473	79,129	I	6,344 8.0
Denver & R. G.....	138,782	110,187	I	28,595 26.0
Hann. & St. Jo.....	47,880	48,294	D	414 0.8
St. L. & S. F.....	68,400	65,000	I	3,400 5.2
St. P., Minn. & Man.....	127,100	74,500	I	52,600 70.6
Union Pacific.....	763,388	645,081	I	117,707 18.2
Week ending Oct. 22:				
Grand Trunk.....	\$245,085	\$250,299	D	\$5,214 10.4
Week ending Nov. 4:				
Great Western.....	\$110,229	\$115,201	D	\$4,972 4.3
Week ending Nov. 5:				
Chl. & Gd. Trunk.....	\$37,570	\$27,306	I	\$10,264 30.5

## New England Railroad Returns.

The following are returns made to the Railroad Commissions of Massachusetts and Connecticut for the year ending Sept. 30:

	Earnings.	Expenses.	Net earn.
Boston & Providence.....	\$1,410,313	\$1,052,522	\$357,791
1880.....	1,323,025	948,772	374,253
Eastern.....	3,094,274	1,960,673	1,133,601
1880.....	2,905,056	1,820,128	1,084,928
New Haven & Derby.....	147,564	99,296	48,268
1880.....	122,886	74,110	48,776
N. Y., N. H. & Hartford.....	5,027,317	3,293,162	1,734,155
1880.....	4,294,236	2,509,250	1,694,986

## Grain Movement.



week 118,923 bushels, or 3.3 per cent., were down the Mississippi—more than the river shipments of the previous five weeks.

Of the Atlantic receipts New York had 60 per cent., Baltimore 14.4, Boston 9, Montreal 8.4, Philadelphia 6.5, New Orleans 1.4, and Portland 0.5 per cent. New York gains over the previous week more than the total gain, and there is a gain also at Baltimore, but considerable decreases at Montreal and Boston. Montreal will very soon cease to receive. Exports from Atlantic ports for five successive weeks have been:

	Nov. 9.	Nov. 2.	Oct. 26.	Oct. 19.	Oct. 12.
Flour, bbls.	42,626	39,620	58,500	53,579	53,759
Grain, bu.	1,841,120	1,898,996	2,761,643	2,352,219	2,451,884
Flour, bbls.	130,806	92,803	75,575	107,596	128,074
Grain, bu.	4,701,048	5,072,436	5,302,054	5,800,518	5,837,439

The receipts of the Atlantic ports are 3,364,000 bushels (46 per cent.) less than the corresponding week of last year, and are the smallest since 1876; they are, however, a little larger than in any of the three weeks next preceding it this year.

Of the Northwestern receipts for the week this year Chicago had 55 per cent., St. Louis 14.4, Peoria 13.5, Milwaukee 7.2, Toledo 4.7, Detroit 3, and Cleveland 2.2 per cent.

This distribution is much the same as the week before. Receipts and shipments at Chicago and Milwaukee for the week ending Nov. 11 were:

	Receipts.	Shipments.
Chicago.....	1,708,332	3,063,367
Milwaukee.....	245,047	436,783

Both..... 1,953,379 3,500,150 2,160,370 3,705,017  
There is a decrease of 44 per cent. in the receipts, and of 41 per cent. in the shipments.

Receipts and shipments at Buffalo for the week ending Nov. 11 were:

	Receipts.	Shipments.
By water.....	1,190,500	3,373,500
By rail.....	603,800	676,000

Total..... 1,800,300 4,049,500 1,585,900 4,049,500

The lake receipts are 2,177,000 bushels (64 per cent.) less than last year; the rail receipts but little less; the canal shipments are 2,012,825 bushels (71 per cent.) less than last year, and the rail shipments are 908,700 bushels (54 per cent.) less.

Receipts at four Eastern ports for the week ending Nov. 11 were:

	New York.	Boston.	Phila.	Baltimore.	Total.
1881.....	3,423,868	297,515	221,350	306,317	3,309,450
P. c. of total.....	73.2	6.9	5.2	7.1	100.0
1880.....	3,292,140	430,200	955,600	1,260,880	5,938,820
P. c. of total.....	55.1	7.2	16.6	21.1	100.0

The receipts of New York are larger than for some weeks previous, but Boston's are exceptionally small, and those of the other two places are light, as they have been a month and more.

Of the New York receipts for the week 1,163,826 bushels, or 48 per cent., was by rail, against 2,130,333 bushels and 64½ per cent. in the corresponding week of last year.

San Francisco wheat exports in October were 60 cargoes, amounting to 3,409,455 bushels. For the four months of the California crop year from July 1. to Oct. 31 the exports were as follows, flour in barrels and wheat in bushels, flour reduced to wheat in the totals:

	1881.	1880.	Increase.	P. c.
Flour.....	238,451	195,063	41,388	21.2
Wheat.....	11,602,853	4,902,897	6,700,000	137.9
Total.....	12,841,304	5,097,960	7,743,344	152.0

This year 82.7 per cent. of the wheat went to Great Britain; 9.8 per cent. to France, 6.6 per cent. to Belgium, and a few scattering shipments to Cape Town, Central America and the Pacific islands. The flour was more widely distributed, Great Britain taking 42.5 per cent., China 39.3 per cent., Central America 8.2 per cent., the rest being divided between Japan, South America, Panama, British Columbia, Mexico, the Pacific islands and Cape Town.

Exports of California barley by sea for the four months from July 1 to Oct. 31 were: 1881, 17,791 casks; 1880, 385,690 casks; decrease, 367,899 casks, or 95.4 per cent. Shipments of barley overland by rail from July 1 to Sept. 30, 1881, were 35,872 casks.

#### Coal Movement.

The coal tonnages of the week ending Nov. 5 are reported as follows:

	1881.	1880.	Increase.	P. c.
Anthracite.....	568,601	504,833	63,768	12.6
Semi-bituminous.....	110,392	86,347	24,045	27.8
Bituminous, Penna.....	58,985	46,133	12,852	27.9
Coke, Penna.....	43,320	32,068	11,252	35.1
Total.....	781,398	669,381	112,017	16.7

The anthracite trade continues active, and there is even some delay in filling orders at tidewater points. Late rains have removed the scarcity of water which has limited operations at some of the collieries, especially in the Schuylkill region.

Coal receipts at San Francisco in October were 142,900 tons, the largest on record. The receipts for the ten months ending Oct. 31 were 782,500 tons, from the following sources: Pacific Coast mines, 281,200; British Columbia, 128,600; Eastern (anthracite and Cumberland), 21,000; Australian, 110,000; European, 241,700; total, 782,500 tons.

Chicago coal receipts for the ten months ending Oct. 31 were:

	Anthracite.		Bituminous.	
	1881.	1880.	1881.	1880.
By lake.....	493,967	369,078	242,530	210,573
By rail.....	441,702	273,804	1,655,071	1,290,217
Total.....	935,729	643,482	1,897,601	1,500,790

Total increase in anthracite, 292,247 tons, or 45.4 per cent.; total increase in bituminous, 396,811 tons, or 26.4 per cent. The increase in anthracite, especially in rail receipts, is notable.

#### Traffic of New York Canals.

For the first week of November the business of the New York state canals was:

	1881.	1880.	Inc. or Dec.	P. c.
Tons shipped.....	205,008	173,772	31,236	18.0
Miles cleared by boats.....	205,747	335,503	D. 129,756	38.7
Tons.....	332,471	837,100	D. 504,629	15.1

The large increase in tons shipped in connection with the very large decrease of the miles cleared shows how much more of the traffic this year must have been for short distances.

Among the items of freight shipped were the following, in tons:

	1881.	1880.	Inc. or Dec.	P. c.
Lumber.....	64,356	34,839	I. 29,517	85.3
Grain.....	67,128	72,580	D. 5,452	14.4
Iron and iron ore.....	19,170	9,078	I. 10,092	111.3
Coal.....	31,171	23,086	I. 8,085	34.9
Sugar and molasses.....	917	408	I. 509	125.0

The grain shipments are among the largest of the season

this year, yet much less than last year. In all other important items there is a very large increase this year. After this date there is not likely to be any considerable through shipments, as the canal will probably close before they can get through.

#### Chicago and Milwaukee Receipts.

	1878.	1879.	1880.	1881.
Chicago:				
Grain, bu.	4,770,874	4,879,478	5,049,875	4,143,223
Flour, bbls.	164,044	178,043	204,822	135,802
Hogs, No.	376,581	313,189	391,586	205,061
Milwaukee:				
Grain, bu.	1,151,704	1,529,409	1,177,141	517,240
Flour, bbls.	103,087	118,904	149,210	118,324
Hogs, No.	56,204	55,038	63,295	46,358

The receipts of everything have been lightest this year, and the grain receipts were a third less than last year.

There is a decrease in the second week of November, compared with the first, the average daily receipts of the two places each week in the two years, and for the whole month of October, having been:

	1881.	1880.	Decrease.	P. c.
October.....	551,732	878,498	326,766	37.2
Nov. 1st week.....	413,104	651,114	237,920	36.6
Nov. 2d week.....	363,618	536,732	173,104	32.3

The receipts usually fall off in November, but there have been some who supposed that the small receipts since September were unnatural, and that grain kept back would soon come forward. Very few lake shipments are made now and these exclusively by propellers, but still the shipments are larger than the receipts.

#### Southwestern Railway Association.

Commissioner Midgley, of the Southwestern Railway Association, has addressed the following private letter to the general managers of roads in the Association:

"Under the new agreement, taking effect Nov. 13, the percentage of tonnage which shall apply to the three divisions only are determined. There are no percentages as agreed upon to apply to the allotment of tonnage between the lines comprising each of the other divisions.

"It is advisable, however, that some percentage be used in compiling the daily and weekly statements sent out regularly from this office. For this purpose I have assumed to use certain percentages, and, in so doing, wish to say that this is done without prejudice to any line, or the slightest intimation in any respect that they are those which should apply in any case. They are simply used as a matter of convenience to facilitate our operations, and because it was necessary to have some working basis in order to control the tonnage until such time as the lines comprising each of the divisions can get together and agree as to the several allotments."

The percentages thus adopted are: St. Louis Division—Chicago & Alton, 28.8; Missouri Pacific, 41.9; and Wabash, 29.3. Chicago Division—Chicago & Alton, 27; Chicago, Burlington & Quincy, 40½; Chicago, Rock Island & Pacific, 24½; and Wabash, 8. Hannibal & St. Louis Division—Divided equally between the lines.

The Chicago Tribune says: "The Chicago roads in the Southwestern Railway Association are now doing an immense live-stock business. In fact, they have not cars enough to take care of all that offers. While the shipments of live stock to Chicago are heavier than at any previous season, the shipments to St. Louis are unusually light, which shows that this class of business continues to seek the Chicago market. For the first six days in November 338 car-loads of live stock were shipped from Kansas City to Chicago. During the same period only 19 car-loads were shipped from Kansas City to St. Louis. During the month of October there were shipped from Kansas City to Chicago 1,415 car-loads of live stock, while the St. Louis roads during the same space of time carried from Kansas City to St. Louis but 340 car-loads."

#### Western Railway Weighing Association.

The number of cars weighed under the direction of this Association in September was 47,829. In October there were 45,914 cars weighed, and a few of the reports for that month have not yet been sent in.

#### New York Milk Rates.

There is now on trial before the Supreme Court in New York a suit begun by Nelson B. Killmer, a Brooklyn milk-dealer, against the New York Central Company to recover damages for alleged excessive charges on milk. The rate on milk to New York was formerly 60, then 55 and is now 40 cents per 10-gallon can. The plaintiff claims that the rate is excessive as compared with charges on other freight, and that it is further illegal as being the same from all stations, without regard to distance. The company claims that the rate is fixed by special contract and is not excessive, as special cars must be provided and special trains run for this business, and the empty cars returned without charge. The Court dismissed the case Nov. 16, holding that plaintiff had shown no sufficient grounds of suit.

#### RAILROAD LAW.

##### Liability of a Receiver to be Sued.

A dispatch from Washington, Nov. 14, says: "A decision was rendered to-day in the United States Supreme Court in the case of Francis H. Barton vs. John S. Barbour, Receiver, a case involving the liability of a receiver to suit in the Court of another state than the one whose Court appointed him. It is held that where the Court of one state has a railroad or other property in its possession for administration as trust assets, and has appointed a receiver to aid it in the performance of its duty by carrying on the business to which the property is adapted, a Court of another state has no jurisdiction to entertain a suit against such receiver for a cause of action arising in the state in which he was appointed, and in which the property in his possession is situated, based on his negligence or that of his servants, in the performance of their duty in respect of such property, or for any service performed or materials furnished the receiver in carrying on such business. The judgment of the Supreme Court of the District of Columbia is affirmed. Opinion by Justice Woods. Dissenting opinion by Justice Miller."

##### Liability for Freight Destroyed on a Connecting Line.

In Washington, Nov. 14, the United States Supreme Court gave its decision in the case of the St. Louis Insurance Company vs. the St. Louis, Vandalia, Terre Haute & Indianapolis Railroad Company. This was a suit brought by the St. Louis Insurance Company, as assignee of Meier & Co., to recover the value of certain cotton shipped at St. Louis in 1873 for Liverpool, under agreement between Meier & Co. and a fast freight line, known as the Erie & Pacific Dispatch. The cotton was shipped by the Dispatch over the Vandalia Line, thence over the lines of the Pittsburgh, Cincinnati & St. Louis, the Atlantic & Great Western and the Erie Railroad companies. It was burned at Jersey City while in custody of the Erie. The Vandalia Line did not execute a bill of lading, but way-billed the freight from St.

Louis to Indianapolis, and there delivered it in good order to the Pittsburgh, Cincinnati & St. Louis Company. The main question presented by the case is, whether the Vandalia Line was responsible for the safety of the cotton after delivering it to another carrier. Its liability was asserted by the owners of the property in question, upon the ground that it and the other railroads had an arrangement whereby a through rate was established for the whole route. Such an arrangement, it was contended, made the railroad companies partners as to third persons. This Court does not decide whether the Vandalia Line could or could not take the benefit of the special exceptions in the bill of lading given by the Erie & Pacific Dispatch to Meier & Co., but assumes for the purposes of the decision that Meier & Co. were not bound under the proof by any special terms which that instrument contained. The Court then holds that a mere division of the established through rate by the railroads among themselves on the basis of distance only (each road bearing the expenses of its own route, and of all transportation over it) is not of itself sufficient to make these roads partners, or to bind any one of them, as by special contract, to transport the cotton beyond its own line. The Erie & Pacific Dispatch is liable under its contracts for the safety of the cotton on the whole route, but each railroad is responsible only for its own negligence. The judgment of the Circuit Court is affirmed with costs. Opinion by Justice Harlan.

#### The Tennessee Railroad Tax Law.

In two decisions rendered in Nashville last week the Tennessee Supreme Court pronounced the railroad tax law of the state unconstitutional and void. The published summary of the decisions is as follows:

1. Constitutional Law—Railroad Assessment Law—Void.—The meaning of the constitution, Article II, Sections 28-9, is that all property must be assessed upon the same principle; all assessments must be made by the same rule; the basis of valuation must be uniform, and all property assessed at all must be assessed at its real value. By the act of March 20, 1875, all the property of a railroad company, houses and lands, personally and realty, track and rolling stock, goes into a general aggregate valuation without any attempt to fix the value of each piece or species of property. This aggregate value is divided by the number of miles in the road, and the value per mile, thus obtained, is multiplied by the number of miles lying inside a county or municipal corporation, and this product is the amount subject to county or municipal taxation. By the uniform practice of this state, since the constitution of 1884, the property of private citizens is assessed at so much for each article or species of property—personally and realty are separately assessed. There must not be one rule for railroad companies and another for private citizens. The assessment of the property of both must be governed by the same principle. The act fixes an arbitrary standard of valuation for the property of railroad companies different from that by which the property of individuals is assessed. It practically prohibits counties and municipal corporations from taxing the real property of the company, lying inside their limits, at their actual value. The act is unconstitutional and void.—Overruling L. & N. R. Co. vs. State, 8 Heiskell, 663.

2. Same—Same—Exemptions.—The act provides, "from the aggregate value is to be deducted the real cash value of individual shares." The constitutional mandate, that "all property shall be taxed" prevents the Legislature from granting any exemption whatsoever, no matter what the consideration. The grant of the exemption is unconstitutional and void. Approving.—M. & C. R. Co. vs. Gaines, 3 Tenn. Chan. Rep. 611.—N. & C. St. L. R. Co. vs. Chattanooga.

#### THE SCRAP HEAP.

##### Locomotive Building.

The Baldwin Locomotive Works in Philadelphia are finishing an order for 20 mogul freight engines for the Northern Pacific.

The Grant Locomotive Works in Paterson, N. J., are just now turning out several consolidation engines for the St. Louis, Iron Mountain & Southern road.

It is reported that the Rogers Locomotive Works in Paterson, N. J., have closed a contract for 100 engines for one company. The works have just completed five engines for the Marquette, Houghton & Ontonagon.

The Schenectady Locomotive Works at Schenectady, N. Y., are very busy on engines for the New York Central and Lake Shore roads. The large addition to the works is well advanced.

The Canadian Locomotive & Engine Co. has completed the addition to its works at Kingston, Ont., besides repairing and refitting the old shops. The new building is 324 by 60 ft., two stories high and will be filled with new machinery, all the tools having been ordered some time ago. The company now employs 300 men, which number is to be increased, and expects to turn out 150 engines a year when the new shops are in full use. The improvements and additions have been made under charge of Mr. T. G. Gorman, Superintendent of the works, who is well known in the United States.

##### Car Notes.

It is said that the Wagner Sleeping Car Co. is about to build repair shops in St. Louis, to repair the cars which it has just put on the Iron Mountain road and those which it expects shortly to put on other Southwestern lines. The company now has 34 new sleeping cars under construction.

The Feteler portable railroad and dump car factory in St. Paul, Minn., is to be enlarged, on account of the number of orders received.

The LaFayette Car Works, at LaFayette, Ind., are being enlarged by the addition of a wheel foundry, 175 by 150 ft. A new boiler and engine and a number of new tools have lately been put in.

The Marquette, Houghton & Ontonagon shops at Marquette, Mich., are building 20 new flat cars for the road.

The Pullman Car Works at Detroit have just finished a very elegant and completely furnished car for President Villard, of the Oregon Railway & Navigation Co. Two other cars very similar to this are nearly finished, one for President Jewett, of the New York, Lake Erie & Western, the other for President Peirce, of the Galveston, Harrisburg & San Antonio. Each of these cars contains a kitchen, sleeping room, toilet room, drawing room or office and an observation room at one end, the latter named room having a door almost entirely of glass and two windows which extend nearly the whole height of the car.

##### Bridge Notes.

The Toronto Bridge Co. at Toronto, Ont., recently completed an iron bridge of 155 ft. span at Bridgetown, N. B., for the Windsor & Annapolis road.

The Clarke Bridge Co. of Baltimore has the contract for two iron bridges over the French Broad River on the North Carolina Division of the East Tennessee, Virginia & Georgia road.

The Keystone Bridge Co. in Pittsburgh has a number of contracts on hand, and its works are fully employed.

The Morse Bridge Works at Youngstown, O., are very busy on contracts.



**Iron and Manufacturing Notes.**

The Tennessee Coal, Iron & Railroad Co. has decided to build a second blast furnace at Cowan, Tenn. The question of building a furnace at Chattanooga is also under consideration.

The Sligo Iron Co. is building a large warehouse in St. Louis.

The rolling mill at Boonton, N. J., which has been idle for several years, has been leased by Mr. Joseph Wharton, of Philadelphia, who will start up some of the puddling furnaces and the bar mill at once. It is said that the rest of the works, including the nail mill, will also be started soon.

The Chester Rolling Mill in South Chester, Pa., is running full double time on plate iron. The new blast furnace adjoining the mill is nearly finished. Work has been begun on the new steel works, which will have two open-hearth furnaces of 30 tons capacity each.

Proceedings have been begun against the Allentown Rolling Mill Co., at Allentown, Pa., to enforce a partnership claim for over \$1,000,000 held by Ario Pardee and the estate of the late J. Gillingham Fell.

The new Colebrook Furnace at Lebanon, Pa., went into blast Nov. 1, both stacks being started at the same time.

The West Point Steel Works at Leeburg, Pa., are almost ready to begin the manufacture of open-hearth steel.

Durham Furnace, at Riegelsville, Pa., in six weeks recently made an average of 527 tons of pig iron per week, using an average of 4,212 lbs. iron ore, 2,677 lbs. fuel and 2,309 lbs. limestone to the gross ton of iron. The fuel used is a mixture of one-eighth coke and seven-eighths anthracite; average heat of blast, 755 degrees. The furnace is 75 ft. high and 20 ft. bosh.

The Katahdin Iron Works in Maine are making about 500 tons of pig iron per month.

A St. Louis dispatch says: "A consolidation of the iron and steel interests of the city and vicinity has been effected, but not so many companies have joined the syndicate as at first proposed. The new company will consist of the Vulcan Steel Works, of South St. Louis, the Pilot Knob Iron Works, the Iron Mountain Railroad Company, and the Grand Tower Mining and Manufacturing Company, of Illinois. The new directory will be composed of six New York members: Jay Gould, Thomas Dickson, C. K. Garrison, Solon Humphreys, H. G. Marquand and Legrand B. Cannon, and seven St. Louis members: Charles F. Choteau, Thos. E. Tutt, Carlos S. Greeley, J. H. Macon, Edward Walls, Jr., D. K. Ferguson and E. A. Hitchcock. The last-named gentleman will be President of the company. Extensive changes and repairs will be made in the property of the consolidation. Additions will also be made, among which will be the erection of a steel wire mill, a new furnace, and other improvements to the extent of \$500,000."

**The Rail Market.**

The *Iron Age* says of steel rails: "It is difficult to say what is being done in this department. Manufacturers claim to be full, but it is intimated that orders are taken once in a while, although particulars are withheld. One reason, probably, is that they do not wish to make a price for outsiders, and another that orders are entered for regular customers without fixing a definite price. It can easily be understood that with such large concerns as are now in operation, convenience as to time of delivery is an important matter. Where deliveries are stipulated for at a given time, sellers will naturally be exacting as to price, but an order for 20,000 to 30,000 tons, deliverable at their option, is worth a dollar or two per ton to the seller. So far as we have heard of actual quotations, \$62.50 is an inside rate for 1881 deliveries, and \$60 to \$62.50 for 1882. Foreign rails, owing to the advance in freights, are quoted at higher prices delivered, with a good deal of hesitation in naming c. i. f. rates at all. A sale of light rails was made at \$66, delivered at Gulf ports, and it would be difficult to secure any delivery at less than \$62.50, and from that upward, according to date and port."

Iron rails are active and somewhat unsettled. Quotations are \$47.50 to \$48 per ton at mill for heavy sections and \$49 to \$52 for light rails.

Steel blooms are unsettled and quotations nominal.

Old iron rails are firm at \$29 to \$31.50 per ton in Philadelphia.

Spikes are higher at \$3.10 to \$3.15 per 100 lbs. Fish plates, \$2.60 and track-bolts \$3.25 to \$4 per 100 lbs.

**A Brave Engineer.**

A correspondent of the St. Louis *Republican* writes as follows: "On the night of Oct. 27 a heavy passenger train on the Missouri Pacific Road struck something on the track as it entered the bridge across the Osage River. The engine left the track, broke through the bridge, and was buried in the swift waters of the Osage, swollen by recent rains. That the whole train did not follow is due to the fact that the engineer staid at his post, set the air-brakes, and went down with his engine. The fireman and the little son of the engineer jumped and were saved, though seriously injured. The little boy, a hero by the way, and doubtless cast in the same mold as his father, says the last he saw of his father he was at his post. The name of the man who died that others might live is J. F. Wager, of Sedalia, Mo., a railroad veteran of 35 years' service. He leaves a large family, a widow and small children, in indigent circumstances. I wish to be one who will show an appreciation of such devotion to duty, and I inclose \$10, which I trust the *Republican* will see reaches those for whom it is intended."

**New Crossing Signals.**

The Boston & Albany Company has recently put up at the Old Colony crossing in South Framingham, Mass., a set of crossing signals on the Saxby & Farmer system, as made and applied by the Union Switch & Signal Co., of Pittsburgh. The new signals will soon be put into use, and a test of them was to be made this week. When they are fully in use the company will be able to dispense with the double stop which the express trains now have to make at South Framingham.

**Depot or Station?**

The Pennsylvania Railroad Company has given orders that all stations along its lines will hereafter not be known as depots. They have started with Union Depot, at Pittsburgh, which is now called "Union Station." An officer of the company stated that he perfectly agreed with Mr. Richard Grant White that a passenger station was not a depot, and that it was a misnomer to call it such.

**Caught.**

A Recaby, editor of the St. Joseph (Mich.) *Republican*, will have to apply to the State for a change of name before he is called upon to decline any courtesies from the Chicago, Burlington & Quincy Railroad. Yesterday afternoon he called at the General Passenger office and requested a pass to Kansas City and return. It was given him, and forthwith the laconic journalist, with speculative propensities, proceeded to hunt up a scalper's office to make a bargain. On Clark street, opposite the Sherman House, he thought he saw what he wanted, and entered one of the many ticket offices in the Ashland Block. He threw the pass upon the counter with the remark, "Here, boss, is an A. No. 1 pass to Kansas City and return. I will take \$5 for it." The gentle-

man behind the counter took the pass and placed it in a drawer, without saying anything. As he made no move to pay the speculative editor, the latter grew impatient and wanted his money or his pass. "You can't have either," said the polite agent. "This is not a scalping office, but the ticket office of the Chicago, Burlington & Quincy." The editor was thunderstruck, but soon recovered and left the office as speedily as possible, a wiser if not a better man. He called afterward at the General Passenger Agent's office of the Burlington begging for God's sake not to give him away, but his request could not be complied with, as the joke was too good to be kept.—*Chicago Tribune*.

**Car-Builders' Wages.**

The Aurora (Ill.) *Beacon* says: "The mechanics employed in the woodwork department of the Alton Railroad shops, at Bloomington, are petitioning the company for an advance of wages. They claim that the wages now received by them are too small, owing to the advance in produce, to enable them to support their families. It is also the fact in Aurora, that the rate of wages outside the shops is higher than that prevailing within them, and that the better class of workmen are being continually induced to leave employment there for that which pays them better. Large bodies move slowly, but a sense of right must prevail in the great railroad companies to do full justice to their great armies of employees."

**Quick Work.**

The Detroit, Grand Haven & Milwaukee Railroad did a quick job of bridge building at Vernon last Sunday. An iron structure was put in position 146 feet in length, in three spans of 84, 28 and 34 feet in length, in just 24 hours, and when the fact is taken into consideration that the old one had to be removed and new abutments built, it seems like quick work.—*Detroit Post and Tribune*, Nov. 15.

**Dilapidated Freight Cars.**

New England railroad officials criticize somewhat sharply the character and condition of freight cars received by them from beyond the Hudson. In many instances the cars are old, worn out and shabby structures, with their running parts in wretched order, constructed of cheap and inferior materials, and injured by hard use and heavy loads. A freight train on the consolidated road near Stamford was partly wrecked Sunday morning by a broken axle on a Pennsylvania road car, and two or three similar accidents on that road during the past month were traced to like causes. The other day in New Haven, when a freight train came to a stand-still near the round-house, one of the wheels of a Western freight car dropped off. The accident and delay of trains last Saturday night on the New York & New England road was due to a defective axle on a Pennsylvania road car, and our exchanges show many other instances illustrating the defective character of freight cars coming from outside New England. Of course, cars owned by New England roads are occasionally in poor order and cause accidents, but the bulk of the testimony is against those from other roads.—*Hartford (Conn.) Courant*, Nov. 8.

**OLD AND NEW ROADS.**

**Baltimore & Ohio.**—It is said that this company has secured the track and franchises of the old Schuylkill Passenger Railway in Philadelphia, which is now used as a branch of the Spruce & Pine Street horse road. This franchise carries with it the right to use steam on the tracks, and will give the Baltimore & Ohio a line through Philadelphia and a connection with the Reading road and the Bound Brook line to New York.

**Bellaire & Southwestern.**—This company has filed amended articles of incorporation providing for the extension of its road eastward to Cincinnati; also for the increase of the capital stock to \$3,000,000. The road is now in operation from Bellaire, O., to Woodsfield, 42 miles.

**Boston, Hoosac Tunnel & Western.**—Surveys have been begun for the proposed branch of this road from Troy, N. Y., to Saratoga. There is much opposition to the route laid down in Troy, which is on one of the principal streets of that city.

**Boston Horse Railroads.**—The annual reports of the Boston street railroad companies show a very fair degree of prosperity. For the year ending Sept. 30 last the Metropolitan, the largest of the companies, paid 8 per cent dividends on \$1,500,000 stock, and carried over a surplus of \$26,513; its earnings were \$21,241 per mile of track. The South Boston Company earned \$30,832 per mile of track, and paid 8 per cent on \$750,000 stock, leaving a surplus of \$7,774. The Highland Company's earnings were \$21,129 per mile of track; the dividends were 8 per cent on \$400,000, to make up which the sum of \$2,448 was taken from the surplus. The Middlesex Company paid 7 per cent on \$550,000, taking \$4,291 from the surplus; its earnings were \$19,832 per mile. The Union Company had earnings of \$14,382 per mile and paid 9 per cent on \$500,000, leaving a surplus of \$1,901. Lastly, the Lynn & Boston paid 10 per cent on \$294,400 stock, carrying over a balance of \$249; its earnings were \$8,709 per mile, the lightest in the list.

All the companies report mileage, not of road, but of tracks, a mile of double track counting, of course, as two miles in the report. The six companies report in all 186,487 miles of track, over which cars ran 11,542,834 miles, carrying 67,291,929 passengers. The average receipts (including rentals and miscellaneous) were 5.135 cents per passenger carried.

**Boston, Lowell & Concord.**—Governor Bell, of New Hampshire, has addressed a letter to Mason W. Tappan, Attorney General of the state, in relation to the legality of the contract between the Boston & Lowell and the Concord companies, in which he says:

"A suit is now pending in the Supreme Court, in which, I understand, the precise question under consideration is involved, and may be expected to be determined at as early a day as any proceeding instituted on the part of the state could be. I desire you, therefore, to watch the progress of that suit with the view to learn the opinion of the Court as soon as it shall be pronounced. Should it appear to you, however, that the suit is collusive, or in any way fails to promise a speedy decision of the question, I direct you forthwith to commence proper proceedings, in behalf of the state, against the Concord Railroad Corporation, so that the question of the legality of its action with reference to the contract aforesaid may be settled by the Court at the earliest day possible. It is my determination that the laws of the state, so far as their enforcement depends upon me, shall be respected and obeyed alike by all, whether corporation or individual."

**Carolina Central.**—An agreement was concluded last week under which a majority of the stock and bonds of this road were sold to John F. Robinson, representing the Seaboard & Roanoke and the Raleigh & Gaston companies, who own the line from Norfolk, Va., to Hamlet, N. C., on

this road. The purchase of the control of this road completes the line from Norfolk to Charlotte.

The Carolina Central road is 242 miles long, from Wilmington, N. C., through Charlotte to Shelby. It was originally the Wilmington, Charlotte & Rutherford, and has been twice sold under foreclosure. As now organized it has a light debt, which the road will probably be able to carry. Its possession will be of considerable advantage to the new owners.

The sale was made by D. R. Murchison, President of the company. Subsequently an application for an injunction was made by Edward Matthews and wife, of New York, on the ground that Mr. Murchison held the securities in trust only and had no right to transfer them without consent of the real owners. At one time a long litigation seemed probable, but the latest news is given as follows in the *Raleigh News* of Nov. 15:

"All difficulties in the way of the sale of the Matthews stock in the Carolina Central Railroad Company to President Robinson being removed, the bargain was consummated on Saturday. The Seaboard & Roanoke Railroad Company is the purchaser, and it now holds the majority of the stock of the Carolina Central Railroad Company. Captain Murchison is to remain President of the road. The new arrangement will be a great benefit to all concerned."

**Chesapeake & Ohio.**—This company is making rapid progress with the improvements at the new deep-water terminus at Newport News, Va. Two wharves have been built, one for coal and one for general freight, and work will soon be begun on a large grain elevator. Newport News is being properly laid out, streets opened and other preparations made for the town which is expected to grow up there.

The *Louisville Courier-Journal* says: "There seems to be no longer any doubt that Gould and Huntington have formed an alliance, and that from Cincinnati to the West there will be no conflict of interest between them. This is a matter that concerns Louisville in many ways. Since the purchase of the Short-Line by the Louisville & Nashville, the relations between that corporation and Mr. Huntington have not been very friendly. Those authorized to speak for him have announced that he intends to build a line from Lexington to Louisville and from Louisville to Elizabethtown. It has also been announced some months ago that Huntington had determined to build a line from Cincinnati to Louisville on the north side of the Ohio, in order to divide the business with the Short-Line. This seemed somewhat chimerical to outsiders, as railroads are seldom built for revenge alone. Recent occurrences have thrown Gould and Huntington together, and it is plainly to the interest of Gould to build this Ohio River road and connect at this place with the Louisville, New Albany & St. Louis road. In this way Gould secures more than he could have done had he captured the Ohio & Mississippi, and Mr. Huntington gets a St. Louis connection, the Chesapeake & Ohio road. In a few weeks through cars will be running from Louisville to Norfolk, as the Big Sandy is about finished. It may be, therefore, that Mr. Huntington will abandon the idea of building from Lexington to this place, and instead, with Gould, build a road from Cincinnati to Louisville. This gives the St. Louis Air-Line considerable speculative value. Mr. Huntington once had a contract with the owners which would have given him control, but he surrendered it, and it passed into the possession of Boston capitalists. It is now a line of considerable importance to the Chesapeake & Ohio, and also under certain contingencies to the Louisville & Nashville."

**Chicago & Iowa.**—It is reported that an agreement has been concluded under which this road will be worked by the Chicago, Burlington & Quincy. It is not stated when this arrangement will take effect. The Chicago & Iowa road extends from Aurora, Ill., to Forreston, 82 miles, with a leased branch from Rochelle north to Rockford, 16 miles.

**Chicago, Milwaukee & St. Paul.**—A regular train has been put on the Council Bluffs Extension to run between Marion, Ia., and Tama, 50 miles. Track is laid about 10 miles beyond Tama, and tracklaying is in progress at several points on the line.

The company has completed a branch from Rockton, Ill., on the Racine & Southwestern Division, southward to Rockford, 14 miles. This branch is to be extended 10 miles further, to Davis Junction on the Chicago & Pacific Division, as noted below.

It will be remembered that a few months ago there was a sharp fight over the Chicago, Rockford & Northern road, from Rockford south to Rochelle, between this company, which claims possession of a majority of the stock and bonds, and the Chicago & Iowa, which works the road under a lease. This trouble has now been amicably settled by an agreement, under which this company is to receive from the Chicago, Rockford & Northern a strip of land 40 ft. wide, upon which it will build a track of its own from Rockford south about 10 miles to Davis Junction, to the crossing of its Chicago & Pacific Division. Until this track is finished, the company will have the free use of the Chicago, Rockford & Northern track to Davis. This company in return, abandons its claims to the road from Rockford to Rochelle.

A Chicago dispatch says that the suits brought by John I. Blair and others to set aside the transfer of the Chicago & Pacific road to this company have been compromised and will be withdrawn. This company effected the settlement by purchasing the claims of Mr. Blair and his associates, which amounted to about \$1,800,000, and thus becomes sole owner of the property and of all the liens upon it, except the bonds which it has itself issued upon the road as a division of its own lines.

**Chicago, Portage & Superior.**—Officers of this company report that arrangements have been made to place the bonds of this company and to build next year 100 miles from the Chicago end and 65 miles on the northern end, from Superior, Wis., to Chandler.

**Chicago Railway & Transfer.**—This company has filed articles of incorporation to build a railroad from a point near South Chicago, in Hyde Park township, through the towns of Hyde Park, Lake, Calumet, Lyons, Cicero, Jefferson and Lake View to a point in Jefferson or Lake View. The incorporators are Victor D. Gowan, Charles Roberts, Francis A. Riddle, Richard Gregg, of Chicago, and S. L. Insles, of Elgin, Ill. This is another project for a belt freight line around Chicago.

**Chicago & Western.**—This company has been organized to build a short road from Chicago, to the western line of Cook County. The capital stock is \$200,000; the incorporators are A. J. Atwater, Wm. L. Glass, George Merriwether, Arthur Ryerson and R. F. Stevens.

**Cincinnati, Columbus & Hocking Valley.**—This company has been organized to build a railroad from Cincinnati to a connection with the Hocking Valley coal fields, probably through a connection with the Columbus, Hocking Valley & Toledo road. It is proposed to make the line chiefly a coal road.

**Cincinnati, Selma & Mobile.**—This company has been organized to build a branch or cross-cut 17 miles long from Akron, Ala., on the Alabama Great Southern, across to a connection with the Selma & Greenbush road. It will



shorten somewhat the connection of the Alabama Great Southern with Selma.

**Columbus & Council Bluffs.**—This company has filed articles of incorporation for a railroad from Council Bluffs, Ia., eastward through Osceola to Columbus, about 250 miles. The office is in Osceola, Ia. The incorporators are Cary Cooper, Wm. Loughridge, B. F. McMillan, L. McMillan and David Morgan.

**Dallas & Western.**—This company has filed articles of incorporation in Texas. The proposed road will extend from some point in or near the city of Dallas, thence running in a northwesterly direction to a point on the Rio Grande in the county of Presidio; and also a line from some point on the main line in Haskell or Throckmorton County; thence running in a northeasterly direction to some point on the Red River, in the county of Wichita or Clay, being a total distance of 750 miles. The principal office of the company will be in Dallas. The amount of capital stock is placed at \$750,000, in shares of \$100 each, with the privilege of increasing the capital stock from time to time to any amount required for constructing and operating the road. The following are the names and residences of the incorporators: John W. Forney, Samuel J. Randall, W. H. Brady, Frank Link, Thomas J. Everett, W. W. Restell and James Forney, of Pennsylvania; Charles H. Cole, J. W. Throckmorton, W. M. Walton and C. C. Slaughter, of Texas.

**Danbury & Norwalk.**—A report that this road has been leased to the New York & New England Company is denied by President Wilson, of the last-named company. It is reported that the New York, New Haven & Hartford is negotiating for a lease of the road.

**Danby & White Hall.**—Surveys are in progress for this road from Danby, Vt., on the Bennington & Rutland road west by north to White Hall, N. Y., about 40 miles. It is said that the projectors of this road intend to run the line from White Hall through to Sackett's Harbor, on Lake Ontario.

**East Tennessee, Virginia & Georgia.**—Contracts have been let for the grading of the cross-cut from Ooltewah, Tenn., on the Chattanooga Branch to Red Clay on the Selma Division. It will be 11½ miles long, and is to be finished by June 1, 1892. It will be a short-cut for business between Chattanooga and the Selma Division.

At the annual meeting in Knoxville last week, the stockholders voted to ratify all the various leases and agreements made by the board of directors since the last meeting. It was resolved to adjourn to meet again in Knoxville, Jan. 11.

President Cole reported the company in a very prosperous condition, and explained the system which had been formed, extending from Memphis and Meridian to Norfolk and also to Brunswick, with the promise of early completion of the Morristown Extension into North Carolina, and the extension of the Knoxville & Ohio, under contract to be completed by July, 1892, which will give connection via the Louisville & Nashville railroad to Louisville, and via the Kentucky Central Railroad to Cincinnati and the West generally. He reported the work on the new lines in Georgia progressing satisfactorily, and all under contract to be finished by July 1, 1892, when this great system will be interwoven and knit together, the future of which is exceedingly promising. When the links are completed the East Tennessee, Virginia & Georgia Railroad Company will own in fee about 1,120 miles, but the company has leases and contracts connecting with it, aggregating in all 2,579 miles, which the company either owns or contracts with other companies to run over their roads.

**Evansville & Terre Haute.**—Local aid has been voted for an extension of this company's Owensville Branch from Cynthia, Ind., southwest.

**Hannibal & St. Joseph.**—Notice is given that 25 bonds of the sinking fund land grant mortgage were drawn for redemption on Nov. 15, in accordance with the terms of the trust. The numbers drawn are 34, 35, 71, 84, 162, 225, 252, 269, 352, 388, 440, 465, 566, 612, 643, 649, 706, 725, 729, 733, 737, 779, 818, 819 and 825. These bonds will be paid on presentation at the office of the Farmers' Loan & Trust Company in New York; interest upon them will cease 60 days from date of drawing.

**Hudson Tunnel Railroad.**—Work has for some time been progressing quietly and steadily on the tunnel under the Hudson River. On the New Jersey side a considerable advance has been made, and work has been begun on the shaft on the New York side.

The contract for completing the tunnel is to be taken by the Hudson River Tunnel Construction Company, which has just been organized, with a capital stock of \$2,000,000. Part of this stock is to be offered for public subscription.

**Illinois Central.**—This company's statement for the month of October shows the earnings of its lines as follows:

	1881.	1880.	Decrease.	P. c.
In Illinois.....	\$455,867	\$688,110	\$232,243	4.7
In Iowa.....	174,458	182,101	7,642	9.2
Total.....	\$830,325	\$880,211	\$49,886	5.7

During October, 1881, the land sales were 1,471.03 acres for \$8,430.63, and the cash collected on land contracts was \$11,513.15.

**Kankakee & Seneca.**—This road is now completed, as far as tracklaying is concerned, from Kankakee, Ill., west by north to Seneca on the Chicago, Rock Island & Pacific road, 72 miles from Chicago, a distance of 44 miles. The road is an extension of the Cincinnati, Indianapolis, St. Louis & Chicago, and is controlled by that company, giving it a cut-off to the Rock Island road west of Chicago. Some ballasting and finishing are to be done, but the road will soon be opened for business.

**Kansas City, Ft. Scott & Gulf.**—Contracts have recently been let for the grading of 90 miles of the extension of this road from Springfield, Mo., to Memphis. Additional contracts will soon be ready to let.

**Lake Erie & Lake Chautauqua.**—It is proposed to build a railroad from Mayville, N. Y., on Chautauqua Lake, northwest to the Lake Shore & Michigan Southern near Westfield. The distance is about 10 miles.

**Louisville, Cincinnati & Lexington.**—A deed of conveyance has been filed whereby this company conveys all its railroad and property to the Louisville & Nashville Company, the consideration being \$7,000,000 in bonds to be issued by the Louisville & Nashville Company, and secured by a mortgage upon the purchase road. The bonds have 50 years to run, and the Mercantile Trust Company, of New York, is the trustee under the mortgage. This transfer completes the incorporation of the Louisville, Cincinnati & Lexington road into the Louisville & Nashville system.

**Louisville, New Albany & Jeffersonville Belt.**—This company has been organized to build a railroad from New Albany to Watson, Ind., which is the first station on the Ohio & Mississippi north of Jeffersonville. There will also be a branch to Jeffersonville, and the road will be about 13 miles long in all. The object is to connect all the roads com-

ing to Louisville on the north side of the Ohio, and also to reach the large cement works near Watson.

**Manhattan Elevated.**—The new agreement has been approved by the boards of directors of the three elevated railroad companies, and duly executed. It provides that the New York Elevated stockholders shall receive for their present stock an equal amount in first-preferred 6 per cent, non-cumulative stock of the Manhattan Company; the Metropolitan stockholders to receive second-preferred 6 per cent. stock, and the present Manhattan stock to remain as common stock. This will make the total stock of Manhattan \$6,500,000 first-preferred, \$6,500,000 second-preferred and \$18,000,000 common. This settlement is opposed by some of the Metropolitan stockholders, who will try to enjoin its execution.

**Marietta & Cincinnati.**—The members of the bondholders' committee met in Baltimore, Nov. 11, and held a conference with Mr. W. K. Cowen, who appeared as representative of the Baltimore & Ohio Company. The terms offered by him were not acceptable to the committee, however, and no agreement was reached.

**Marquette County.**—This road is to extend from Quinnesec, Wis., on the Menomonee River, southeast through Marquette County, with several branches. It is to be built by several lumber firms and will be used chiefly for hauling logs.

**Memphis & Charleston.**—A dispatch from Huntsville, Ala., states that the board of directors chosen at the annual meeting on Nov. 15 will proceed at once to take steps to set aside the lease of the road to the East Tennessee, Virginia & Georgia Company and to obtain its return to the control of the stockholders. The new board includes several directors who are connected with the Louisville & Nashville and the Nashville, Chattanooga & St. Louis, and the movement to set aside the lease is apparently in the Louisville & Nashville interest.

**Midland North Carolina.**—This company has now 10 miles of its line graded from Goldsboro, N. C., westward. The bridge over Little River is in place and tracklaying will soon be begun.

The company has much improved the condition of the Atlantic & North Carolina road (from Goldsboro to Morehead City), which it leases, and has added to the equipment. Surveys are being made for a branch about 20 miles long, from Core Creek station southward to Jacksonville in Onslow County.

**Milwaukee, Lake Shore & Western.**—The Northern Extension is now completed and opened for business to Kempster, Wis., 11 miles northward from the late terminus at Antigo, and 219 miles from Milwaukee. Regular trains began to run to Kempster Nov. 7. The stations on the new extension are Deerbrook, 215 and Kempster, 219 miles from Milwaukee.

**Missouri, Kansas & Texas.**—Track on the Southwest Extension has been laid to Hillsboro, Tex., 50 miles south by east from Ft. Worth and 146 miles from Denison. The southern part of this extension is nearly parallel with and a little east of the Gulf, Colorado & Santa Fe's branch to Cleburne. Work is progressing from Hillsboro southward.

**Missouri Pacific in Nebraska.**—The first section of this road has been completed; it extends from Hiawatha, Kan., on the St. Joseph & Western road, northward to Falls City, Neb., 15 miles. North of Falls City the grading is completed for some distance and tracklaying is in progress. Work has been begun on the line from Hiawatha southeast to Atchison.

**Mobile & Ohio.**—Freight trains are now running over the Cairo extension to East Cairo, Ky. Regular passenger trains will be put on about Dec. 1.

**Montreal, Portland & Boston.**—The passenger trains on the section of this road from West Farnham, P. Q., to Frelighsburg have been discontinued and will probably not be resumed until the extension from Frelighsburg to Shelton, Vt., is finished.

**New Bonds.**—New bonds have been rather scarce on the New York market lately, but several issues are offered in Boston.

**Cincinnati Northern** first-mortgage 6 per cent. bonds are offered at 96 by C. H. Verner & Co., of Boston; total amount not stated. The road was formerly the Miami Valley, and is to run from Cincinnati to Columbus.

**Florida Southern** first-mortgage 7 per cent. bonds are offered by Brown, Riley & Co., of Boston. The company has a state land grant of 13,840 acres per mile. The issue of bonds is \$7,000 per mile.

**Massachusetts Central** 6 per cent. bonds are offered by Charles A. Sweet & Co., of Boston; amount not stated.

**Nevada Midland.**—This company has filed articles of incorporation for a railroad across Nevada from the California to the Utah line, through the Walker River country, Austin and White Pine. The distance is about 325 miles.

**New York, Lake Erie & Western.**—It is announced that the Voting Trustees in London, who hold one-half of the common stock in trust, have forwarded their proxies to President Jewett, intimating their desire that the management shall continue unchanged.

There is a report that Jay Gould has been trying to secure control of the company, and that an attempt will be made just before the election to enjoin Mr. Jewett from voting the trust stock.

**New York & New England.**—This company has completed a short branch from its main line near Boston to Dedham; it is about 1½ miles long. Regular trains began to run this week.

**Ogden Mine.**—The negotiations which have been referred to heretofore have ended in an agreement for the lease of this road to the Central, of New Jersey, for 999 years at a rental equivalent to 5 per cent. on the stock, which is \$450,000; the company has no debt. The Central will extend its High Bridge Branch to a connection with this road. The Ogden Mine road is used exclusively for freight, chiefly iron ore, and is 10 miles long, from the Ogden Mine in Sussex County, N. J., to Nolan's Point on Lake Hopatcong, where ore is loaded into boats from the Morris Canal, which has a connection with the lake. There are also several short spurs connecting with other mines.

**Ohio.**—The answer of the Ohio Railway Company directors to the complaint in the *quo warranto* suit has been filed in the Supreme Court. It contains nothing new, being a general assertion of the legality of the consolidation, and a rehearsal of the forms of procedure adopted in carrying it out.

**Ozark & Iron Mountain.**—This company has filed articles of incorporation to build a railroad from the St. Louis, Iron Mountain & Southern near Mineral Point, Mo., west by south to Hartsville in Wright County, about 110 miles.

**Portland Junction.**—This company has been incorporated to build a belt or junction road around the city of Portland, Me., connecting all the roads entering the city.

**Rome, Watertown & Ogdensburg.**—The Buffalo Commercial Advertiser says: "The subject of building a suspension bridge across the Niagara River at Lewiston is being revived. The project was conceived three years ago by the Rome, Watertown & Ogdensburg and Great Western railroads, but dropped, the Great Western being afraid that such a connection might stir up its competitor, the New York Central, with disastrous results to itself. It is now proposed to cross at a point where the old suspension bridge near Lewiston, the remains of which can at present be seen, spanned the river. The Rome, Watertown & Ogdensburg, after crossing the river, will make connection with the Great Western between Suspension Bridge and the new Welland Canal, by building a branch eight miles long. For the purpose of building this eight miles of line the township of Grantham, in which the city of St. Catharines is located, has bonded for \$80,000, and the town of Niagara, on the Canadian side, will hold a meeting on Wednesday to vote on the proposition to bond for \$40,000 for the same purpose."

**Roswell.**—This road is now completed from Doraville, on the Atlanta & Charlotte Air Line (15 miles from Atlanta), north by west to Roswell, Ga., 10 miles. It is a branch of the Air Line, and will be worked by the Richmond & Danville Company, lessee of that road.

**St. Louis, Iron Mountain & Southern.**—Regular trains have begun to run on the Louisiana Branch to Chidester, Ark. 18 miles southeast from the main line at Gurdien. Tracklaying is progressing towards Camden, 10 miles beyond the present terminus.

**St. Louis & San Francisco.**—A dispatch from St. Louis, Nov. 7, says: "A deed of trust recently issued by the St. Louis & San Francisco Railroad Company for \$30,000,000 was filed in the Recorder's office here Saturday evening. The deed was given to the United States Trust Company of New York, and is on the entire line of the road and its property, and not only covers all present indebtedness of the road, but all future extensions and branches. The present debt of the road is about \$15,000,000, for which new bonds will be issued at once, and the remaining \$15,000,000 will be issued as required for construction of the main line and branches. A copy of the mortgage will be filed in each county in Missouri, Kansas and Arkansas through which the road runs."

**Saratoga & Mt. McGregor.**—Surveys have been nearly completed for this road. It will be about 10 miles long, from Saratoga, N. Y., to a point near the summit of Mt. McGregor, which is already a place of some resort; it is now proposed to build a large hotel there. The incorporators are: George West, Ballston, N. Y.; James D. Taylor, Palatine Bridge, N. Y.; James Arkell, W. J. Arkell, A. G. Richmond, Benjamin Smith, Canajoharie, N. Y.; John Kellogg, John Warner, Amsterdam, N. Y.; Duncan McGregor, Glen's Falls, N. Y.; D. H. Fonda, N. D. Wendell, Albany, N. Y.; Howard Lockwood, George Van Slyck, New York.

**Southern Pacific and the Texas & Pacific.**—It is stated that a contract has been concluded for the settlement of all differences between these companies. The agreement, it is reported, provides for a union of interests, not only of these two companies, but also of the Central Pacific and all the Gould lines from St. Louis southwest. The Texas & Pacific is not to be built west of the junction with the Southern Pacific, the track from that point to El Paso to be used by both companies. The Galveston, Harrisburg & San Antonio is to have free use of the Gould lines to Galveston, Texarkana and St. Louis, and the Southern Pacific lines eastward are to have joint use of so much of the New Orleans Pacific track as they may require. There is also to be an adjustment of interests in Texas, which will prevent the building of parallel lines there.

**State Line & Sullivan.**—Surveys are nearly finished for an extension of this road from Monroeton, Pa., to the Pennsylvania & New York road near Towanda, a distance of five miles. The company now uses the track of the Barclay Coal Company from Monroeton to Towanda.

**Texas-Mexican.**—This company has executed a mortgage to secure an issue of bonds upon all its lines, completed and to be built, at the rate of \$15,000 a mile, to bear 6 per cent. interest. The mortgage is made to the Guarantee, Trust & Safe Deposit Company, of Philadelphia, as trustees.

This company has bought from the parties who purchased it at foreclosure sale the Galveston, Brazos & Colorado road, including about 15 miles of narrow-gauge road from Galveston to Seaford and some real estate on Galveston Island. The price paid was \$60,000.

**Tionesta Valley.**—Track on this road has been laid from Sheffield, Pa., to Lower Sheffield, two miles. It is expected that rails will be laid to Brookville, 7½ miles, by the end of the year.

**Toledo, Michigan & Northwestern.**—This company has been organized to build a railroad from Toledo, O., to the Michigan State line, about seven miles.

**Union Pacific.**—This company is now running a fast train between Omaha and Denver by way of the Julesburg Cut-off. The distance between the two cities by the new line is 568.6 miles, and the run is made in 23¼ hours, an average of a little over 24 miles an hour. The Cut-off is a much better line than that by way of Cheyenne or the Kansas Division, having very easy curves and lighter grades than the old line. Entirely new equipment has been provided for the new trains.

**Valley, of Virginia.**—At the annual meeting in Staunton, Va., last week, the President's report showed net earnings for the past year to be \$11,983, against \$10,873 for the year before. During the year by the sale of notes, bonds, etc., and earnings of the road, the debt due the Baltimore & Ohio was reduced \$32,836. The report referred very encouragingly to the outlook for the future. The road has been let on contract, and will be completed to Lexington by June. At that point a very advantageous arrangement has been made for connection with the Richmond & Allegheny road, by which the Valley road will secure the transportation of vast quantities of minerals from the James River section to the furnaces of Pennsylvania.

The connection with the Richmond & Allegheny road will be made about a mile from Lexington, and the line into that town will be owned and used jointly by the two companies.

**Wheeling & Lake Erie.**—Work has been progressing steadily on this road for some time, and a correspondent informs us that the rails are now laid from Massillon, O., northwest to Huron on Lake Erie, a distance of 80 miles, and the track is advancing rapidly. The road is laid with 56 lbs. steel rails from the Edgar Thomson Steel Works. The line from Norwalk, O., to Toledo is well advanced. The road is to run from Toledo to Wheeling, W. Va.